

# THE AUTOMOBILE

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## FOX HUNTING WITH AN AUTOMOBILE.

NASHVILLE, TENN., Nov. 24.—Prof. J. F. Draughon, of this city, is a great devotee of the chase. He keeps a pack of thirty fox hounds at his residence, four miles out from the business center of town, on the Granny White Pike, where he has entertained hundreds of

Professor Draughon is a very busy man, being president of his system of two dozen business colleges, located in fifteen different states. The executive duties that devolve upon him in connection with them impose a heavy mental strain that necessitates recreation, which is considered just as essen-

Being the owner of an automobile and familiar with its time-saving qualities, the professor hit upon the idea of making his trips in the car and taking his pack of dogs with him in a trailer coupled on behind. He designed a special trailer, which was built by J. J. Anderson, of this city, to be



END OF AN AUTOMOBILE FOX HUNT IN TENNESSEE.—THE QUARRY BROUGHT TO BAY.

friends from Nashville and other cities. In his pack are some of the best-blooded dogs in the country, and all of the animals are subject to registration. The professor knows the best hunting ground for miles around this section. The best of it lies from fifteen to twenty miles from the city. Now,

tial to his health and ability to dispatch his work as are wholesome food and sufficient sleep. But it was found that frequent indulgence in his favorite pastime caused too much loss of time, owing to the inability to get quickly from his home to the scene of the chase with his pack of hounds.

attached to the auto by means of a coupling resembling a railroad car coupler. The screened body of the four-wheeled trailer has room for twenty dogs, and there is an upper deck, in which tents, saddles and other paraphernalia are carried. In a lower compartment are packed heavy cooking uten-

sils and similar articles. The photographs herewith, taken during a recent fox hunt, give a good idea of the appearance and arrangement of the outfit. Now when the professor arranges for a hunting trip at some distance he sends his horses to the hunting ground in the afternoon; and when he and his friends arrive in his automobile with the dogs, the horses are saddled and the dogs let out of the trailer fresh; the fox is soon going, and the race is on in earnest. After the chase, by special signal, the dogs are called in and get into the trailer, and in a very short time the hunting party has made its return to the city. If any of the dogs are lost or are slow in coming in, one of the colored men who attend to the dogs remains behind and brings them in. By this plan not more than thirty minutes is usually required in getting in from the hunting ground, fifteen to twenty miles from the city. Thus the distance between home and hunting grounds has been materially reduced, as the auto with the trailer attached can make from twenty to twenty-five miles an hour over good roads. Now the owner finds that he can leave his business late in the afternoon and reach the hunting grounds on time, without worry or the loss of any of his dogs before reaching the place selected. In certain sections of the country where he knows the run of the fox he finds no occasion to ride to the hounds, as he can often remain in his car and hear the dogs run for hours without losing a minute of the chase.

It is believed that this interesting innovation by Professor Draughon will result in enabling many equally busy men to enjoy such sport who otherwise would be debarred from it because of the loss of time.

The professor and his family have just returned from a 200-mile trip in his 1905 White, which was purchased through the Southern Automobile Company, of this city. They visited Bowling Green, Russellville and other places in Kentucky without the loss of any time on the trip for repairs to the car.

## FAST CARS FOR FLORIDA.

### Leading Builders and Prominent Sportsmen Planning to Compete for Records.

Much interest in the Florida tournament to be held from January 22 to 27 on the Ormond-Daytona beach, is already shown by manufacturers, agents and prominent amateur drivers. There is some uncertainty and speculation regarding the probability that William K. Vanderbilt, Jr., will again be a competitor for the mile straightaway record which was taken away from him last winter by Arthur Macdonald, with the Napier. On the one hand, it is intimated that Mr. Vanderbilt may drive the 200-horsepower racer that is being built at the Darracq works in France. Manager McWilliams, of the F. A. LaRoche Company, who sailed for Europe last week, is expected to bring this car back with him in time for the tournament. On the other hand, it is hinted that Mr. Vanderbilt may stick to the Mercedes and drive a special new racing machine that is under construction in the Unterturckheim works. The hope is entertained at the German works, it is said, that the special trophy offered for the car that shows a record of two miles in one minute may be won with this car.

Foxhall P. Keene and S. B. Stevens are mentioned as wealthy sportsmen who may be expected to compete for the record. Walter Christie is building a new 120-horsepower racer especially for the tournament. Unlike the previous models of equal power, this is to be driven entirely from the front pair of wheels instead of having the power divided between the front and rear pairs.

A new six-cylinder Napier of high power is to take part in the events and defend the mile record now held by this English make. Clifford Earp, who won a number of racing successes with the Napier during the continental tour last summer, may pilot the car on the American strand.

Lancia and Fletcher are expected to take part in the events with Fiat cars, and it is likely that the Itala car will be seen then

for the first time in competition in America, driven by Fabry.

The big air-cooled Premier racer built for the Vanderbilt Cup race, is to be handled in Florida, it is said, by George Robertson, who drove the Christie in the eliminatory race on Long Island, and Carl Fisher will enter the thirty-mile American championship and the 100-mile free-for-all for the Indianapolis cup, with the new 60-horsepower National.

Two events, an amateur handicap and an amateur championship, both at ten miles, have been added to the programme of events for the Ormond-Daytona beach tournament, as published in THE AUTOMOBILE of November 2. Entry blanks are now ready and may be secured from W. J. Morgan, 116 Nassau street, New York; entries close at noon, January 8. The tournament commences January 22 and ends January 27, though the meet is subject to postponement in case of stormy weather. There will be no cash prizes, all prizes being either medals or plate.

## RAILWAY MOTOR CARS IN MARYLAND

BALTIMORE, Nov. 25.—Officers of the Washington, Frederick & Gettysburg Railway Company have practically decided to use gasoline motor cars on the new road that the company is building between Frederick and Thurmont, in Frederick County.

The new road was originally intended for an electric road, but the officers have been in correspondence with that department of the Union Pacific Railroad Company, which has had charge of the operation of the motor cars used on the U. P.'s lines in Nebraska, and they find that the use of gasoline cars will save the road a great deal of money, both in construction and operation, obviating the need of overhead wires and a power plant.

The distance between Frederick and Thurmont is about fifteen and a half miles. It is proposed later to extend the road to take in other villages in the county.



PROFESSOR DRAUGHON WITH HIS TOURING CAR AND SPECIAL TRAILER LOADED WITH PACK OF FOX HOUNDS.



## TENDENCIES OBSERVED AT OLYMPIA SHOW.

*From Our Own Correspondent.*

**L**ONDON, Nov. 17.—The Olympia show to-day reveals in a marked way the fact that the British manufacturer considers himself sufficiently advanced to strike out in new lines of construction, regardless of Continental and American practice. In fact, the show seems to mark the commencement of an era in which the accepted lines of the present day automobile will be no longer adhered to, but from the parent stock will be evolved special types to suit almost every possible demand.

Considering the mechanical points first, the most interesting feature of the show is the extraordinary variety in the types of motors themselves. Nothing less than four cylinders is common, except on the smallest cars, while six-cylinder engines have made a big advance in favor. Napier's naturally adhere to this type—more than 80 per cent. of the output of the firm for 1906 will be fitted with six-cylinder engines—and Ariel, Belsize and Rolls-Royce cars have followed suit. The new six-cylinder Panhards attract considerable attention, and a 30-horsepower six-cylinder Clément is expected to be on view almost at once, while the new 30 Gladiator will have six cylinders.

Finality has not yet been reached; the Rolls-Royce firm exhibit their new eight-cylinder engine, which, developing 28 horsepower, should be delightfully smooth running on account of the even torque. An eight-cylinder 120-horsepower marine engine is on view from the firm of Chas. Birks, Ltd., and no doubt others of this type will be soon in evidence. The use of ball bearings right through the car is becoming general, but several firms—notably the makers of the Argyll car—rather incline towards the use of roller bearings. Horizontal engines—discarded long since by the French maker—are in favor with Wolseleys, James & Brown, Singers and others, but on the other hand Wolseleys adopt vertical engines for all powers above 12 horsepower, and the makers of the Lanchester car have deserted the horizontal type for the vertical.

One of the most interesting points is the relative proportions of shaft and chain drive. The British, and somewhat to a less extent the French, makers have hitherto been inclined towards the use of the chain, but this year a big increase in the number of users of live axles is here evident. The new C. G. V., the 15-horsepower Siddeley, nearly all Napier's and many new cars now employ the live axle.

In the matter of gear boxes and gear changes there are two opposing tendencies. As a direct result of the Tourist Trophy Race, several cars—Rolls-Royce, Minerva, Vauxhall—have increased the number of

speeds to four, the third speed, on which most of the driving is expected to be done, being direct drive. On the other hand, the Rolls-Royce cars fitted with the eight-cylinder engine have but two speeds, and of these the low speed is intended to be required only in exceptional circumstances, such as starting on a steep hill. The four-cylinder car of the New Engineering Co. also has only two speeds, and this indicates the tendency to make the engine as flexible as possible.

An increased use of the magneto is in evidence—both high and low tension forms. In most cases both magneto and battery ignition are fitted, but some makes rely on magneto alone. Where the battery is used, a single coil and a high-tension distributor seem to be preferred to the use of four coils.

The honeycomb radiator seems to have lost public favor; the greater number of cars on show were fitted with the gilled tubes. Another interesting return to former practice is seen in the increase of the size of wheels, 34 inches diameter being used in many cases.

The old type of drip lubricators worked by pressure feed from the exhaust is being superseded by a positive driven oil pump which discharges the correct amount every revolution. This should cause an abatement of the "over-lubrication-and-smoky-exhaust" nuisance. The number and variety of clutches are increasing. The multiple disc type is greatly favored, and metal-to-metal clutches are common.

Although a commercial rather than a technical matter, the matter of guarantees, which has become prominent at this show, is worth mention. Very few makers previously give a definite guarantee for their cars except the understanding that the car is in working order when leaving the factory. Many firms have now announced their determination to guarantee their goods against constructional

and material defects for varying periods, generally six months, but in one case this is even extended to a period of two years. This new step is useful in indicating that the manufacturer is now able to place absolute reliance on his productions and that the time of experiment is passed.

The quality of the carriage work has improved in a marked degree and greater scope is given to the ingenuity of the body builder by the almost general adoption of covered-in bodies. The show has been humorously styled a "landaulette show," and there is ample reason for this remark in the number and variety of enclosed bodies adopted.

The tonneau rear entrance body is almost extinct, side entrance bodies of varying types being in favor. On many small wheelbase cars the front seat beside the driver is made to swing round on a pivot and permit the passengers to enter the tonneau through the space thus opened out. The general tendency throughout may be said to lie in the direction of increased comfort both of passengers and driver, the latter being relieved of much inconvenience by the placing of the control levers on the steering wheel and the arrangement of gear and brake levers within easy reach. Increased care has been taken in fitting up the car in such a way that all adjustable parts are accessible without trouble, the contact breakers being in many cases either on the dashboard or right at the front by the starting handle.

Altogether, the show may be said to be very interesting and to demonstrate an increasing tendency on the part of the manufacturers to depart from recognized custom and to strike out on new lines for themselves. This movement can have no other effect than to cause far more rapid progress in the industry during the next few years than if all plodded contentedly along in the same path, attempting nothing but to perfect one type of automobile.

### Leading British Cars at the Show.

**L**ONDON, November 17.—At ten o'clock this morning the Olympia opened its doors on the first of the new season's shows. This is the second show held this year by the Society of Motor Manufacturers and Traders—a body which includes as its members the principal manufacturers and agents of motor vehicles in Great Britain. On the whole, the show can well be said to be far more representative than any of its British predecessors. At the third exhibition in February last there were 248 exhibitors, while now just over 300 firms occupy stands, and many more, unable to find room, have

had recourse to the Stanley show, which is being held at the same time. The Olympia show is undoubtedly international in character, for fifty-one foreign firms are represented—either direct or through their agents. A detailed examination of the exhibits reveals the extent to which the foreign manufacturers—and in particular the French—have been compelled to rise to the occasion in the matter of date. Hitherto the Paris Salon de l'Automobile in December has been the first exhibition at which patterns for the succeeding year have been on view, and in consequence thousands of English

automobilists have journeyed to Paris for the occasion. This has been materially detrimental to the best interests of the British manufacturer, as many Englishmen looking out for new cars have placed their orders at the Salon rather than wait a couple of months for the opening of the British show. By fixing the date of their exhibition for November, however, the Society of Motor Manufacturers and Traders have forestalled the Salon and compelled French makers to show their new models in self-defense at the present show, rather than run the risk of losing British orders by waiting till the forthcoming Paris Salon, December 8 to 24. This line of reasoning on the part of the management has been fully justified, and to-day practically all the leading French models for 1906 were on view—with the notable exception of the Richard Brasier firm, which were not represented. The British manufacturer is now at least on an equality with his French rival, and the British agent benefits in the matter of the orders for new French models.

The show was roughly divided into four classes—pleasure cars, commercial vehicles, motor boats and accessories. The first section naturally predominates, but a surprising advance, both in quantity of exhibits and their high quality, is visible in the second section—doubtless owing to the tremendous advance in the matter of mechanical transport which is now commencing in Great Britain. The motor boat section is not far behind in importance, and as regards interest, perhaps takes second position. The big Napier Major gives the annex the appearance of a graving dock, while the presence of several well-known racing boats lends additional interest.

In the matter of general beauty the Olympia show makes no pretense of rivaling the Salon. The structural magnificence of the Grand Palais gives to the latter a big lead, which is increased by the elaborate stands erected by the French firms. Olympia is itself more useful than artistic, and the stands of the English makers are in general quite in keeping with this idea. The beauty of the Clément and Delaunay-Belleville stands is very marked—the latter having taken first prize at the last Paris show—but the huge wrought-iron structure of the Daimler Company comes a close rival. Several other English stands are more artistic than usual—that of the Argyll Company being surmounted by a big model of part of their new works (which, when completed, will be by far the largest in Great Britain).

The stand of the "White" steam cars is imposing and attracts much attention. It consists of an oval sign with radiating edges, the word White being inscribed in silver letters on a blue ground. An efficient scheme of illumination at night creates an attractive effect. The novelty on the Mercedes stand must not be forgotten—especially since it has made its presence felt in an unusual way. A huge two-sided canvas depicts in varied hues two scenes of London

thoroughfares—in winter and in summer—the car which is the subject of the advertisement being naturally predominant.

The exhibits present in many cases features of considerable novelty and many structural tendencies are noticeable; these will be mentioned later. The British exhibits show, individually and collectively, the great progress which the native industry has made during the past year. On most of the leading British stands both the design and quality of work compare favorably with French productions, and in the cases of many firms—Napier, Rolls-Royce, Daimler, Ariel—it would be an extremely difficult matter to state in what respect the cars of these firms were inferior to a Panhard, a Mercedes or a Richard Brasier.

As regards separate exhibits, it is impossible to give even a short account of all the points of interest, but two or three examples may serve to show the tendencies of the 1906 season.

The Daimler Company—which has had a remarkably successful year—has made the startling announcement of a big drop in prices, made possible by standardization and not by reduction in quality. The new model introduced last season—the 35-40 horsepower—had a wonderful run of successes at the race meetings, and this model will be the main line for 1906. The four cylinders are cast in pairs, and the valves are placed all on the one side, inclined at an angle to shorten the length of the inlet and exhaust parts. A leather-faced cone clutch is used, and gear-box of the usual sliding type, giving four speeds and reverse. All models are made in three lengths of wheelbase. The price has been reduced to \$4,400 and the 28-36-horsepower chassis drops from \$3,500 to \$3,000. A magnificent 35-40-horsepower model is on view, which has been built to the order of H. M. King Edward—being the seventh Daimler owned by His Majesty. This has a covered phaeton body to accommodate four inside, and, of course, the carriage work and finish are superb. The types are the new 150 mm. (6-inch) Continentals and look huge.

The new Napier model is 40 horsepower, six cylinder, and this was to-day the center of much attraction. The chassis frame is made of pressed steel and the flanges are widened at the points where the frame narrows forward to permit of a big lock. The engine has cylinders cast in pairs and the valves are operated from the one camshaft. The hydraulic carbureter is governed in the usual Napier manner by the pressure of the circulating water. Synchronized ignition is, of course, necessary and the high- and low-tension distributors are on the dash driven by a spindle from the camshaft. The Napier clutch has automatically lubricated metal surfaces and the car can easily be started on top speed if desired. In fact, following on the recent long runs by this car on top speed without gear change, it was expected that only two speeds would be em-

ployed on the 1906 models, but, nevertheless, three and reverse are fitted. The 24- and new 60-horsepower models are staged and it is interesting to note what little change has been made from previous seasons. An 18-horsepower Napier landaulette shows a tendency to depart entirely from usual practice. The engine is placed under the driver's seat, and the bonnet is abolished, leaving additional room for the body. The suspension is three point; a transverse spring fitted at the rear of the frame to which the ends of the ordinary road springs are attached. The rear springs are fixed to two short live-axle sleeves which are united by an arched solid axle. On the inside of these short live-axle sleeves are attached the chain sprockets and brake drums. The driving sprockets on the differential shaft are also fitted inside the frame, so that the entire transmission is out of the way, affording a much more convenient entrance to the carriage body. The landaulette body itself is slung on C springs and leather braces to insure the greatest possible comfort. A refinement introduced on all Napier cars is an arrangement of levers by which the carbureter can be flooded for starting without lifting the bonnet.

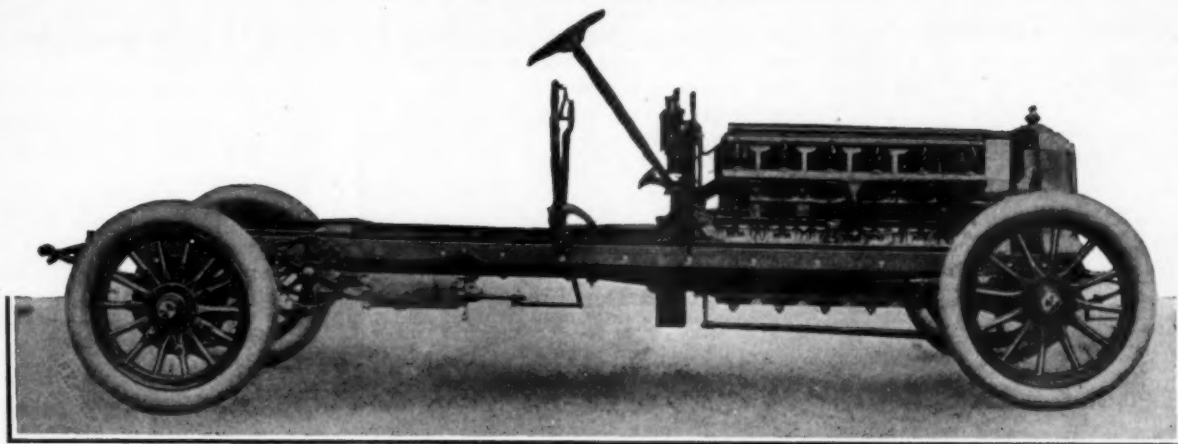
The Brotherhood Crocker car made its first appearance at the last show and has now been increased to 40 horsepower. This car has jumped into the leading rank at once on account of the workmanship and ease of control. A Bradley multiple disc clutch, working in oil, is employed, and also the Bradley coil, which is fitted with a small magnet, causing a rapid and positive single make and break instead of the usual rapid vibration. An interesting feature is the foot control by means of a large foot pedal sliding horizontally and operating the variable lift of the inlet valves.

The Wolseley and Siddeley firms, which were united during the early part of this year, have several new models, which depart but little from previous practice. All Wolseleys over 12 horsepower now have vertical engines; a distinct departure from the usual custom of the firm of fitting only horizontal engines. On the new 15-horsepower Siddeley shaft drive is employed for the first time and double ignition is standard. New 35- and 100-horsepower models are introduced, but these, as is the case with the English makers in general at this show, keep to the same construction as in the late models.

A new car on the market which embodies many good features is named the Iris. This car is fully guaranteed for two years, in accordance with one of the features of this show, though no other maker extends his liability to such a period. The two models are 25-30 horsepower and 35-40 horsepower, showing that there are some makers who still think it desirable to build for the wealthier classes only.

Two important novelties are introduced by C. S. Rolls & Co., one of which is a car





CHASSIS OF NEW PANHARD SIX-CYLINDER 50-HORSEPOWER CAR EXHIBITED AT LONDON SHOW.

named the "Legalimit." This is designed to run at a constant speed of twenty miles an hour, whether uphill, downhill or on the level, without change of gear and without any attention from the driver, who attends to the steering solely. The engine fitted is the same as that used on the other novelty—the Rolls-Royce landaulette, which has been designed to compete with the electric broughams, that are such familiar objects on London thoroughfares. The form of these vehicles naturally prevents the use of a bonnet and vertical engine in front, and the makers have solved the problem by designing the present engine, having inclined cylinders, eight in number. Each cylinder is 3 1-4-inch bore and 3 1-2-inch stroke, giving about 28 horsepower. An impulse is obtained every quarter of a revolution, resulting in an evenness of running surpassing the steam car and approaching the electric motor very closely. The cylinders are in two rows of four, and the valves are placed vertically, shortening the valve pocket. Each row of four cylinders is fired on a separate circuit by its own synchronizer and coil, the two synchronizers being on the same shaft and so causing the cylinders in the two rows to fire correctly relatively to one another. A gear-driven pump sends the allotted amount of lubricating oil to the bearings and obviates the possibility of causing a smoky exhaust. The change-speed gear is abolished, or nearly so. All ordinary driving, including starting, is done on the normal gear; but in case a stop were made on a very steep hill, an emergency low speed is fitted. A reverse is also, of course, necessary. The engine, as might be expected, is delightfully smooth running and vibration is almost entirely eliminated. On the Legalimit car—the significance of which name is readily apparent—is a system of governors to keep the speed constant, but technical details are not yet made public. A bonnet is fitted on this car and the whole vehicle is built remarkably low. This new engine should mark the limit of multiplication of cylinders, for it hardly seems possible that any appreciable increase of comfort would be gained by further increase.

Another car which departs from accepted lines is the Lanchester. The four-cylinder,

20-horsepower engine is placed between the two front passengers, and this arrangement permits of plenty of accommodation without extending the wheelbase. Worm shaft drive, magneto ignition and surface carbureter of the wick type are employed.

The general tendencies everywhere are reduction in price and the use of four-cylindered engines on cars as low as 8 and 10 horsepower. Unlike the French maker, who caters for the wealthy classes and can sell as many high-powered cars as he can turn out, the English manufacturer looks to the middle classes for support and trade, and the evolution of the present type of car bears out this fact in an interesting manner. There are, of course, many English cars of high speed and price, but the majority of makers keep to moderate horsepower and size.

As regards steam cars: About the sole English steam car is the Turner Miese; and in competitions this type has proved itself quite as efficient as its gasoline rivals. Kerosene is used as fuel, and this is to be preferred to gasoline, as even in outlying places a supply of kerosene can usually be obtained.

### French Cars at Olympia.

LONDON, Nov. 17, 1905.—As was expected, the holding of the English show this year in advance of the Paris Salon has caused the French makers—depending to such an extent on British orders—to exhibit their 1906 models a month in advance of the usual time. Practically all the leading French manufacturers—if we except the Richard Brasier firm—are represented here, and their new models are on view for the first time. Panhards are to be seen on several stands, and, as was expected, the principal novelty of this make is the six-cylinder, 50-horsepower model. The cylinders are cast separately and have a bore of 125 mm. diameter and 150 mm. stroke. On one of the chassis exhibited the cylinders were cast in the usual way; the other had steel cylinders and copper water jackets. The valves are arranged on each side of the cylinder and have inspection covers held down by yokes. The frame is steel plates reinforced with wood and the engine is carried on an angle

iron underframe. Eiseman high-tension magneto ignition is used. The carbureter is hydraulically governed. A multiple disc clutch enclosed in the flywheel transmits the power through a gear-box giving four speeds and reverse. The gear-box shafts are run on ball bearings. The other models are 35, 24 and 15-horsepower, four-cylinder, and 8-horsepower, three-cylinder.

Mors cars are built in several new models. The 17-horsepower, four-cylinder has bore of 87 mm. and stroke of 125 mm., and the other powers are 28 and 45 horsepower. Ball bearings are fitted throughout, except in the main engine bearings. The clutch is metal-to-metal contracting type. An additional set of brakes is fitted on the sprocket shaft, and these are applied by the side lever at the same time as the back wheel brakes, the former coming into play slightly in advance of the hub brakes. A small push lever projects from the radiator, and on pushing this, when starting the engine, half compression is obtained.

The new De Dietrich models were on view at the stand of Messrs. Jarrott & Letts. The 24- and 40-horsepower models have not undergone much radical alteration from their 1905 form; the inlet and exhaust valves are now on the same side of the engine and are worked from the one camshaft. The honeycomb radiator has been discarded and an improved type of gilled radiator substituted. Ball bearings are fitted throughout the gear-box, the gears being of the sliding sleeve type. The carbureter is pressure fed, and in place of the small auxiliary tank on the dashboard, a hand pump is fitted to raise the pressure when starting. The new light model 12-15 horsepower has four cylinders 90 mm. bore and 120 mm. stroke. This has high-tension Simms-Bosch magneto ignition, leather-faced cone clutch and sliding gears.

The new De Dion models show that this firm have no intention of following the general custom of adopting the four-cylinder engine for low powers. The new 6-horsepower has three speeds and reverse, and in addition to the 8-horsepower model, which is unchanged, a new 9-horsepower, single-cylinder car, 110 mm. bore by 130 mm. stroke, has been introduced. The motor it-

self looks immense in size, owing to its internal flywheels. This model has a pressed steel frame and is made in two lengths of wheelbase.

Renault's new 10-14-horsepower, four-cylinder car was exhibited together with 1905 patterns of higher horsepower, and the Pilain car made its first appearance in England. This 20-horsepower car has direct drive on both third and fourth speeds, obtained by the use of a special differential gear with sliding bevels.

Charron, Girardot & Voigt have brought out a new 14-18-horsepower car for 1906. On this car drive by cardan shaft is employed, and it is claimed that nearly all the driving can be done on top speed. The engine and gear-box are carried on a sub-frame and three-point suspension is arranged. A big point is the suspension, which is effected by C springs, giving greatly increased comfort. The other new models are 20, 30, 50 and 90 horsepower.

Darracqs have built two new powers for 1906. The 10-horsepower, two-cylinder en-

gine has bore of 100 mm. and stroke of 120 mm., and the new 22-30 horsepower has four cylinders, 112 mm. by 120 mm. The details of the cars are unaltered from last year; the 1905 pattern, 8- and 15-horsepower cars, are still made.

Although, of course, not a new French model, details of the latest Mercedes cars may be well inserted here. In 1906 the standard powers will be 20-25, 35, 45 and 70 horsepower. All engines have ball bearings on crankshaft and low-tension magneto ignition, magneto being direct driven. A new improved clutch is fitted and a completely new model gear-box. The brakes are adjustable by the fingers and a decompressor is fitted, giving half compression on all four cylinders.

Other later details of these cars will be interesting, but this short résumé will show the main features of the new season's models, and well shows the prevalent tendency of catering for autoists who desire a car of moderate power, which will not make a heavy expenditure for upkeep.

## Dufaux Places Kilometer Record at 23 Flat.

PARIS, Nov. 14.—The official record for one kilometer, flying start, was reduced yesterday on the road between Arles and Salon by a Swiss Dufaux car piloted by its constructor, Frederic Dufaux, assisted by the mechanic, Descombe. The time for the kilometer was exactly 23 seconds, or an average speed of 97.25 miles an hour, being two-fifths seconds lower than Rigolly's time with a Gobron Brillié on the Dourdan road.

In the course there was a rise of 2 meters, 470 millimeters (nearly 100 inches), and when the record was made the ground was not in the best of condition, being wet and sticky because of recent rains.

The Dufaux car is the four-cylinder 150-horsepower vehicle built by the Geneva firm

for this year's Gordon Bennett race, but withdrawn owing to a misunderstanding with the French club. Michelin tires were used.

Although the official record is lowered by this performance, in reality the fastest time over the kilometer was made in 1904 by Baras on a Darracq, who covered the distance at Ostend in 21 2-5 seconds. That course was not officially recognized at the time, and although it has since been adopted by the Automobile Club of France, Baras' time still remains unrecognized because he covered the distance in one direction only, whereas for an official test it must be covered in both directions and the average taken.

## Rules for British International Auto Boat Cup Race.

Copies of the conditions and rules for the British international cup race for auto boats for 1906, formerly known as the Harmsworth cup race, have been printed and distributed by the Motor Yacht Club, 119 Piccadilly, London. This organization was formerly the Marine Motor Club, founded by the Automobile Club of Great Britain. The conditions and rules for next year's race are those adopted at the last meeting of the cup commission, held September 11 last at Archachon.

The Motor Yacht Club is trustee of the cup, which is to be competed for annually by not more than three boats from any one country, each of which must be built wholly in the country that it represents.

Except that it must be wholly mechanical, no limitation is put upon the form or nature of the motive power.

Boats representing a country must be se-

lected by a recognized club of that country, the helmsman must be a member of the club and all hands must be natives or naturalized citizens of the country.

All arrangements for the race and all expenses in connection with it must be assumed by the club holding the cup for the time being. Any questions arising from the running of the race shall be dealt with by an international commission.

The cup is to be handed to the club represented by the winning boat at the conclusion of the race and is to be held by that club for one year or until the next succeeding race, unless called upon by the trustees after the expiration of twelve months. The club holding the cup or trophy as custodian must insure it in the sum of \$2,500 against fire, loss or damage.

The race must be held over a course of not less than thirty nor more than thirty-five nautical miles, each circuit to be not less than five nautical miles and no angle less than 120 degrees.

All competitors will be given a flying start

at the same instant, five minutes after a preparatory signal.

The only limitation of size of any competing craft relates to the over-all length of the hull, which must not exceed 39 feet 11 1-2 inches.

There is no restriction as to number, size or power of the engines except that each boat must be fitted with mechanical power that will drive her astern at not less than four knots in still water.

Should none of the competitors be able to complete the course at an average speed of twelve knots, for any reason whatever, the race is to be abandoned for the day and run again on a day to be agreed upon, but not more than three days later. If only one boat is then ready, it shall go over the course and be adjudged the winner.

If any boat meets with an accident or derangement of the machinery necessitating assistance from other than those in the crew, it can take no further part in the race.

Each competing boat must carry at least two life-buoys in position ready for use.

Should no challenge be received by the club holding the cup before February 1 in any year, no race shall be held for the cup that year, and in no case shall a race be held within six months of the receipt of a challenge. The last date at which an entry may be received is July 1 in any year.

## English Tourist Trophy Race.

The A. C. G. B. I. has issued the regulations governing the 1906 race, which will be run off in the Isle of Man, probably in the early part of next year. In general the conditions are the same as for this year, but various detail alterations are made. The fuel allowance has been fixed at one gallon of gasoline for every 25 miles in the case of ordinary internal combustion engine cars; but steam cars will be allowed one gallon of liquid fuel (description not specified) for every 16 2-3 miles. The chassis weight shall not be less than 1,300 pounds, but no maximum weight limit is imposed. The total load, including the body, the driver and one passenger, must not be less than 1,100 pounds. The body must be a standard type for four passengers. To prevent the use of abnormal gears, these are limited in number to four speeds forward and reverse, and the car must be capable of being driven at 12 miles an hour on the level on top speed, without manipulation of the clutch. It must also ascend a hill of 1 in 6 on a forward gear. Cars may be entered by members of any recognized automobile club, not more than two cars by one manufacturer being allowed to enter. \$100 per car has been fixed as the entry fee.

A snake-skin auto coat is said to be the latest fad of a rich automobilist who is having the skin of an anaconda worked up into a pliable, warm and watertight garment. The skin is a handsome, warm brown color with golden brown spots.



## Calculating the Power of a Gasoline Engine.

By RENE M. PETARD.

EASY calculation of the power of a gasoline motor has always been a greatly looked-for convenience. The problem, which is quite a simple one with steam engines, becomes extremely complicated when the internal combustion motor comes to be considered.

The factors which in such a power producer cause variations in the output of the machine are not only innumerable, but, besides, their action is essentially variable under other varying conditions, so that it can safely be said that in the present status of our experience and knowledge of the combustion engine we cannot but obtain an extremely uncertain and subject-to-controversy notion of what the possibilities of a given engine will be.

The only absolutely certain way of knowing the work to be expected in a given time from a given engine is the brake test; and that is a difficult process, requiring special and elaborate contrivances, as well as a great deal of skill and carefulness on the part of the operator.

Confining the present study to mere theoretical conditions, we find, as already mentioned, that the phenomena which take place in the cylinder of an explosion motor are much more complex than those taking place in the cylinder of a steam engine. The intensity of the explosion, the rate of propagation of the ignition wave are intimately dependent upon the quality of the explosive mixture, which varies with every engine, and which varies for each engine with a number of conditions, such as condition of the atmosphere, quality of the liquid fuel, etc. Other variable items may be found in the expansion curve which varies with the point of ignition, the mass of the charge which varies with the outer atmospheric pressure, so that a motor will evidently not give the same results if it be tried on top of a mountain or at the bottom of a mine. And yet the important factor of wall temperature has not been mentioned. How, then, can it be expected to obtain a simple formula that will take into account all these different conditions and follow the variations of the motor's output when the conditions vary in an unknown manner?

Indicator diagrams, if procurable, would be of great assistance in planning out the required formula. But yet a number of constructional details of the greatest importance would still be left whose influence would make all other work absolutely vain. Among these we find the parts, diameters and situation, the shape of the combustion chamber, the position of the sparking apparatus, the disposition and the length of the piping, and numberless others.

The French engineers, however, although perfectly aware of these difficulties, have endeavored to obtain formulas that would give fairly correct or approximate results.

In order to preserve the original form of these formulas, we shall retain the metric units for which they were conceived, leaving to the reader to convert them into the English sizes of any motor that he may want to consider.

In the following formulas the characteristics of the machines will be designated by the following letters:

$d$ =bore of cylinders in metric units.

$c$ =stroke of pistons in metric units.

$n$ =number of cylinders.

$N$ =speed in revolutions per minute.

$F$ =power in French horsepower (75 kilogrammeters; that is, 75/76 of the English horsepower).

Before going further into the subject, it may be well to state that one of the leading French experts, M. Hospitalier, found that in vertical engines the actual piston displacement was practically constant for all engines reasonably well designed, the variation between the extremes being of not more than 20 per cent. for a given power. He found it to be 6 to 7.50 liters per French horsepower, which gives us:

$$\frac{3.1416 d^2 c n N}{120 F} = 0.006 \text{ or } 0.0075 \text{ cubic meter.}$$

from which we obtain

$$F = 4.36 \text{ or } 3.49 d^2 c n N.$$

MM. Vigreux, Milandre and Bouquet consider that the safest course in ordinary circumstances is to take the formulas as:

$$F = 3.49 d^2 c n N.$$

M. Ringelmann, from considerations too lengthy for the frame of the present article, gives:

$$F = 3.37 d^2 c n N.$$

While M. Witz, one of the best experts in France, gave:

$$F = 2.8 d^2 c n N.$$

This gentleman also gave a more complete and elaborate formula, in which enters the mean pressure in the cylinder and the mechanical efficiency  $K$  of the engine; this formula is:

$$F = K N p \frac{3.1416 d^2 c n}{9000} \text{ in which } p \text{ represents}$$

the mean pressure.

It should be noted that the coefficient  $K$  varies in well-made machines from 75 to 80 per cent.; that is, 0.75 or 0.80.

If we apply these different formulas to a known example, for instance, the 40-horsepower (nominal) Mors engine of 1905, we have:

Four cylinders—bore 125 mm.—stroke 150 mm.

Normal speed—1,200 RPM.

We obtain:

Vigreux formula—39.40 horsepower.

Ringelmann formula—37.92 horsepower.

First Witz formula—31.56 horsepower.

Second Witz formula—32.00 horsepower.

These formulas give results much below the reality, since the engine gives an output

of 56.74 horsepower on the brake at 1,200 RPM.

We should, however, consider that these formulas were devised for low-speed engines, while speed is one of the most important variables in the performance of an engine.

Our contemporary, *Engineering*, has, however, given, a long while ago, under the signature of a French engineer, a formula which, although empirical and devoid of any scientific foundation, gives very satisfactory results, however, for high-speed automobile motors, although it is overestimated for low-speed engines; it is the following:

$F$ =total cylinder capacity in liters  $\times$  speed in RPM  $\times 0.0064$ .

For the Mors engine referred to it gives:

$$F = 56 \text{ HP.}$$

which is extraordinarily close to what the actual brake test gave.

## Glidden Tour for 1906.

Announcement of the general plans for the next Glidden tour, as decided upon by the special committee of the American Automobile Association touring committee, was made last week.

The committee has accepted the invitation of the Automobile Club of Buffalo to have the tour start from the home city of the present holder of the trophy—Percy P. Pierce—and has named Buffalo as the starting point. The tour is to start on July 23 and continue for a fortnight.

As Canadian automobilists are eager to have the tour include Canadian territory this year, and the Toronto Automobile Club has extended an invitation to make that city a stopping place, the route has been laid through Niagara Falls and across the river into Canada. On the other side of the border the principal cities to be visited are Hamilton, Toronto, Kingston, Thousand Islands, Ottawa, Montreal and Quebec. From Quebec the tourists will re-enter the United States, going south to Poland Springs, Me., thence traversing the White Mountains country which was visited last July, crossing Vermont to Lake Champlain, then turning south through Saratoga and Albany and following the Hudson down to New York City.

If found necessary, after exploration, this route will be modified in some particulars.

As Buffalo is a convenient starting point for automobilists in the Middle West, it is believed that the number of participants in this year's tour will be large and the event a great success. Already many Westerners have signified their intention of taking part. The country through which the route selected lies is famous for its beauty and is well provided with first-class hotels.

It is not improbable that the run will embrace several other competitions besides that for the Charles J. Glidden touring trophy.

**Redd**—Is he given to blowing his own horn?

**Green**—Oh, no; he has a chauffeur.—*Yonkers Statesman*.

## New Ideas in French Lamps.

THE famous automobile lamp makers of France, who have brought their products to a high degree of perfection, are not yet content with the results of their endeavors, but are constantly striving to produce lamps that shall meet every requirement imposed by the conditions of travel. It has long been recognized, for instance, that the blinding

with some complicated mechanism; the same end is achieved, however, in a very simple way.

The lamp is of the proportions shown by the heavy lines, the back being formed of a hyperbolic mirror *M*, Fig. 1, having the same foci *f*, *F*, in common with the lens. A metal disc *D*, Figs. 2 and 4, is pivoted on an

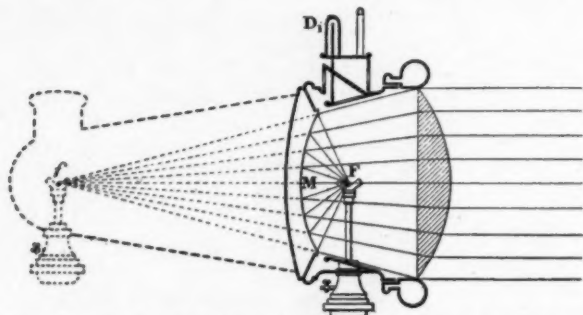


FIG. 1.—SECTION OF BESNARD LAMP SHOWING LONG-FOCUS EFFECT OF PARABOLIC REFLECTOR.

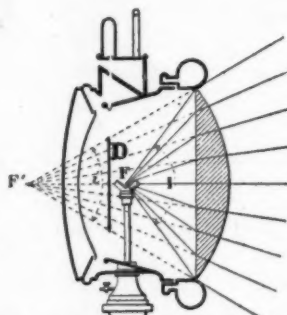


FIG. 2.—SHOWING SHORT-FOCUS EFFECT OF ECLIPSING DISC.

concentrated rays of the acetylene gas searchlight are unsuited to the conditions of street travel in cities where pedestrians and drivers of other vehicles are blinded and confused by the light when approaching and passing. Better to meet the requirements for a diffused light for city streets without sacrificing any of the qualities of the projected rays needed for fast driving over good country roads, a lamp, the Besnard projector, has been brought out in France, where it has thus far had a year's successful use. The details, which are in reality very simple compared with the difficult nature of the problem, are fully shown in the accompanying illustrations, for which we are indebted to *L'Automobile*.

The lens is plano-convex, of the hyperbolic type, the form of the projected beam varying with the position of the light at one or the other of the two foci of the hyperbola. With the light placed at the longer focus *f*, as in the broken lines of Fig. 1, the rays would be projected in the solid horizontal beam of the searchlight. With the light at the shorter focus *F'*, the rays are diffused, as in Fig. 2, as in the common locomotive headlight or with any ordinary form of parabolic reflector. In order to move the light from one focus to the other, a very long body would be necessary in the lamp, as indicated by the broken lines in Fig. 1,

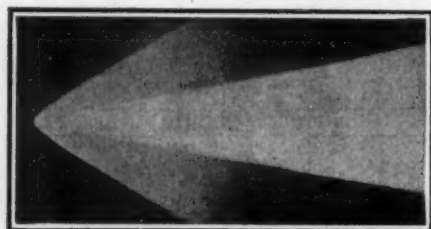


FIG. 3.—SEARCHLIGHT EFFECT PRODUCED WITH DISC RAISED, AS IN FIG. 1.

arm, permitting it to be swung upward into a hood on top of the lamp or to be dropped to a position just behind the light. When the eclipsing disc is raised to the position *D'*, Fig. 1, the rays from the light at the focus *F* are received by the concave mirror *M*, and reflected on the lens in the same direction as though they came directly from a light at the imaginary point *f*, the other focus. When the disc is dropped to the position *D*, Fig. 2, the light is cut off from the mirror and projected direct through the lens, as though coming from *F'*, the center of the hyperbola.

The effect produced when the eclipsing disc is raised and the light is at the long focus is shown in Fig. 3, in which the rays are projected far ahead in a condensed beam. When the disc is dropped, all of the rays are diffused at the wider angle over the whole area in front of the car. Fig. 4 shows the lamp with the front lens swung open, exposing the burner, the long-focus reflector and the short-focus disc lowered into position between them, corresponding with Fig. 2, to produce the diffused light desired for city use of the car.

For convenience in operating the disc, a small lever is attached to the steering posts of the car, and from this a Bowden flexible steel cable leads to a short lever on the lamp, which can be seen just above the hinge of the open front in the photograph. When a pair of these lamps is used, the lever of one is connected with that of the other by a light connecting rod, so that both will move simultaneously. The change from diffused to projected beam, or *vice versa*, can be made instantly by the driver, and the mechanism is adapted to both acetylene and electric lights.

An entirely new type of lamp has recently been perfected in France by Bleriot, who claims to have made the first practical acety-

lene gas lamps for automobiles and whose "phares" are well known in all automobilizing countries. It is expected that the new Bleriot lamp will create something of a sensation at the Paris Salon in December.

Instead of burning the gas of carbide of calcium and water, the new "Phare Bleriot" burns commingled gasoline vapor and oxygen which is directed in a blast upon a pastille or small block of infusible mineral which is raised to a dazzling incandescence by the heat. The general form and construction of the two styles of lamp body are apparent from the photographs reproduced in Figs. 5 and 6, from *L'Automobile*. No generator is employed in connection with them, but a small quantity of gasoline is carried in a pair of angular reservoirs attached to the sides of the lamp and a small steel bottle of compressed oxygen is carried in a box in any convenient place on the car.

Referring to Figs. 7 and 8, from *The Autocar*, the gasoline is fed through a small lead to a tube *O* containing a filtering substance, and thence past the regulating valve *N* into a chamber *F* in the holder *A*. In the center of this holder is supported the pastille *B* of zirconia osmium or other rare infusible earth. Passing down the chamber *F*, in which it is vaporized by the heat, the gasoline enters the chamber *D*, separated from chamber *E* below by a diaphragm *G*. Oxygen under pressure in tank *I* is admitted



FIG. 4.—BESNARD LAMP WITH ECLIPSING DISC LOWERED INTO POSITION.

through a pressure reducer *J* and the lead *H* to the chamber *E*, whence it passes through a fine duct *M* into the nozzle *C*. The force of the jet of oxygen acts like an injector to draw the gasoline vapor from *D* through *C*, where it mingles with the oxygen. Being ignited at this point, the flame impinges upon the pastille *B* and raises it to a temperature that causes a brilliant white incandescence. The form of the burner in which the action described takes place is seen in the aperture at the back of the lamp shown in Fig. 6.

It is necessary before lighting the lamp to heat the holder *A* with a small pad of cotton saturated with methylated alcohol until it will vaporize the gasoline when turned on slightly; then the oxygen is turned on and the pastille quickly becomes incandescent, producing a very powerful and penetrating light.

This system is fitted to lamps of special



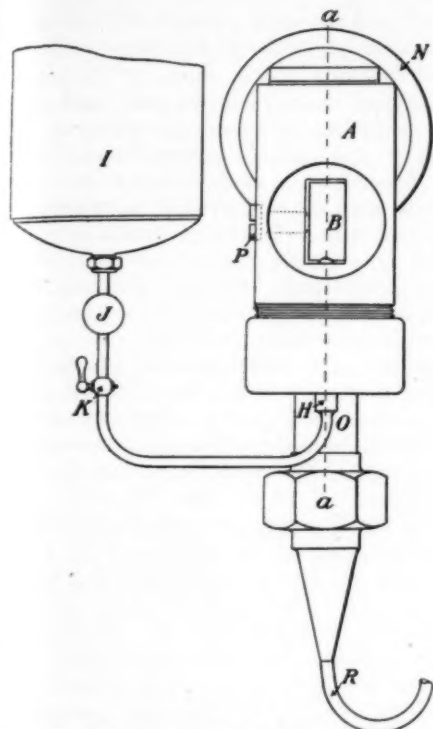


FIG. 7.—DETAIL OF BLERIOT SYSTEM.

design that throw the rays straight ahead in a narrow beam, but which have a shutter by means of which the light can be instantly shaded when desired.

Though the lamp is apparently an ingenious construction and likely to give a splendid light when the mechanism functions properly, many persons will doubtless prefer to use the simpler and more certain American method of carrying a flask of compressed acetylene gas for use with the ordinary form of projector.

#### GENIUS NIPPED IN THE BUD.

That all brilliant schemes do not succeed, was proved in an amusing way last week in Brooklyn, the *terra incognita* to Manhattanites at the far end of "the Bridge." One Schultz, who is in business "over there," and who owns an automobile, conceived a clever plan for advertising his

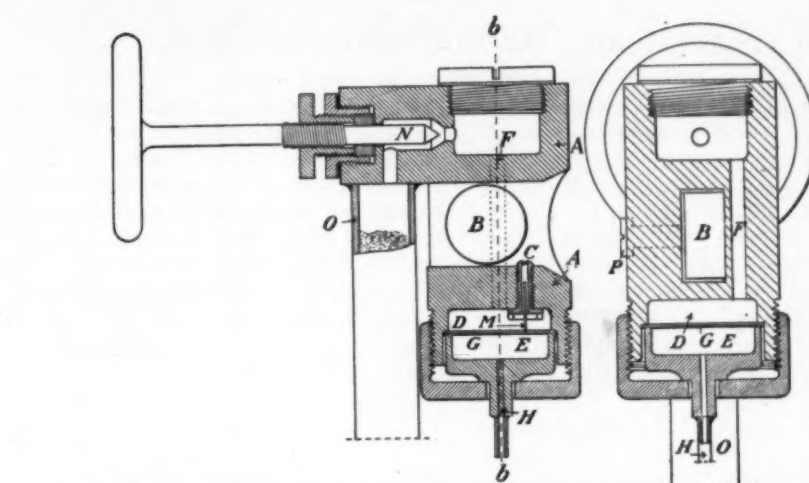


FIG. 8.—SECTIONS OF BLERIOT BURNER SHOWING GASOLINE AND OXYGEN PASSAGES. A, Metal holder for pastille. B, Pastille of zirconia or other infusible earth. C, Burner jet. D, Gasoline vapor chamber. E, Oxygen chamber. F, Passage for vapor from F to E. G, Diaphragm separating chambers D and E. H, Passage for oxygen from E to D. I, Oxygen tank. J, Pressure reducer. K, Cock. M, Oxygen lead to burner. N, Gasoline valve. O, Gasoline filter. P, Set screw to adjust B. R, Gasoline lead from small reservoir.

business. He attached to the running gear of his car a large idle wheel, which he shod with a tire having molded on the tread large letters setting forth his name, the nature of the goods in which he dealt, and the street address where they might be purchased. A reservoir of whitewash and a revolving sponge in contact with the tire kept the faces of the letters supplied with a coating of printing material.

Private trials having shown that the arrangement would work well, Mr. Schultz started out with his machine one day and drove over all the streets he could find in Brooklyn paved with asphalt. When he finished his tour he had left his advertisement imprinted boldly upon about forty miles of city streets. He was still metaphorically patting himself on the back, when in walked a messenger deputy from a street cleaning commissioner, who had come across his trail, and presented a warning that if Mr. Schultz attempted to repeat the trick he would probably fall into the clutches of the police, who had already been asked to be on the alert for him.

Thus was genius rudely nipped in the bud.

#### WOMAN FIGHTING FOR A CAR.

MENDOTA, ILL., NOV. 25.—That a woman will fight for her automobile as she would for a pet is shown in an odd case that is now pending in the Illinois courts.

An Illinois concern had levied on a machine said to be owned by George L. Scheutz, of this place. The auto was taken out into the country and stored in a barn.

Mrs. Scheutz discovered its whereabouts and got out a writ of replevin, setting up the claim that the car belonged to her. The case came to trial in Judge Austen's court. The Judge gave the decision to the woman. The other side then set up the claim that Judge Austen was without jurisdiction, the value of the car being more than \$200. The case has now been taken to the Circuit Court, where Mrs. Scheutz has planned to follow it. She says she will take it to the Supreme Court, if necessary.

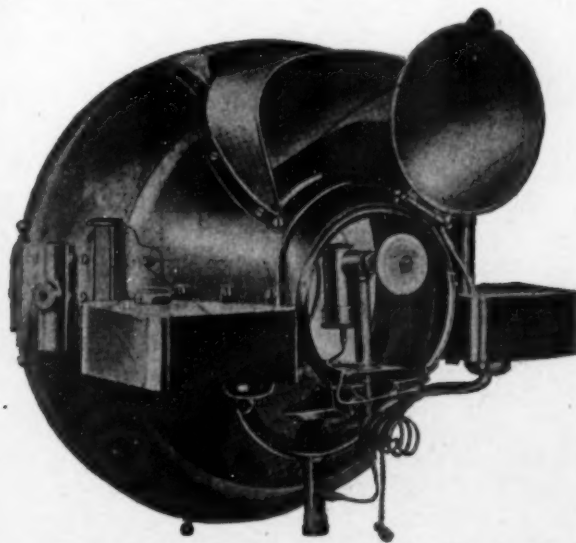
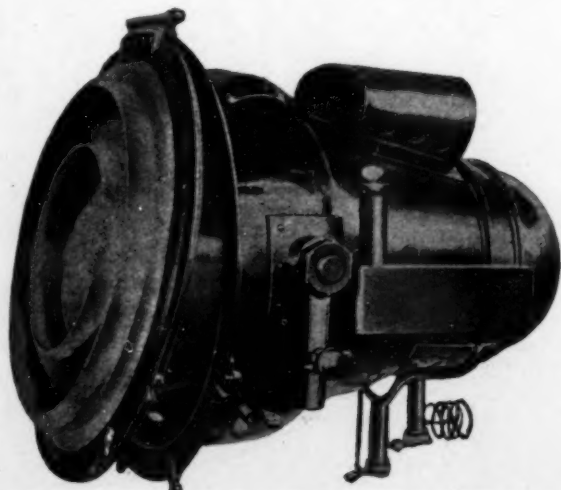


FIG. 5.—BLERIOT SEARCHLIGHT, BURNING GASOLINE AND OXYGEN. FIG. 6.—GRAND PROJECTOR, SHOWING ARRANGEMENT OF BURNER.

## American Automobilists in Cuba.

FEW cities in the United States rival Havana as a center of good roads for automobile trips, says a writer in the *New York Sun*. This is true as regards the distances which may be covered, the smoothness of the roadbed and the general picturesqueness of the scenery. There are many localities in the United States whose scenic beauty would make the Cuban landscape by comparison seem flat and insipid, but not many of them can be visited with comfort in a touring car.

The exact figures of the total length of what may be called the good roads leading out of Havana are not immediately available, but a general estimate indicates more than 200 miles of such highways, including only those which are macadamized and kept in general good condition by the constant work of the *camineros*, or permanent force of road repairers.

It may not be said that all of these highways are at all times kept in perfect condition, but the intention and effort is to keep them so, and the occasional lapses serve only to emphasize the general success. Usually little if any less than 90 per cent. of the total might be traversed with the greatest comfort, so far as smoothness is concerned, at a pace of forty or fifty miles an hour. That speed calls for a good roadbed.

The longest of the possible automobile runs follows a generally southwestward course, into the Province of Pinar del Rio, to San Cristobal, where it terminates very abruptly in what is, during the rainy season, a mudhole. At some time in the near future this road will be continued to the

city of Pinar del Rio, a hundred miles from Havana. From there another road will run northeastward to Bahia Honda, where connection will be made with another road, a considerable part of which is already completed, by which Havana may be reached via Cabañas and Mariel.

Barring a few isolated bad spots, the present road to San Cristobal may be traversed with as much comfort as the roads of Central Park, and at much greater speed than is possible in the Park.

The route is out of Havana by its seaside ward, el Vedado; across the Almendares River on a pontoon bridge; and up the hill to the plateau used as a camp site by the American troops in 1899. Beyond this lie the closely joined towns of Quemados and Marianao. On the western edge of Marianao the road winds down a short and somewhat steep hill, with a sharp turn to cross a high stone bridge to the village of La Lisa. Here, at about ten miles from the center of Havana, the real country is reached. This is no new road. The Spaniards built it years ago. They built it, as they did most of their roads in their colonial possessions, as a military highway to facilitate the movement of troops. Before the war of 1895 it was an avenue along which rich planters built their homes. The section was once an important sugar area, but exhausted soil and the cultivation of new areas in the middle section of the island have so crowded it by competition that it shows to-day no more than a small part of its former greatness. But it is, and doubtless always will be, a fruit producing dis-

trict, and the source of supply of the world's finest cigar tobacco, the famous *Vuelta Abajo* leaf.

At the time of the American occupation the area showed something of what it had been. The evidence appeared in its ruins. Where there had been a mansion, an estate, there were only fire wrecked walls and devastated fields. To-day many of these walls are not even discernible, while those which do remain visible are only weed and vine covered masonry, whose piles of crumbled wall, with occasional unbroken columns and arches, make picturesque subjects for the tourist with a camera. Not one of the great houses has been rebuilt. The work of Antonio Maceo and the Spaniards, the rivals in the process of destruction, was done thoroughly.

But the old Spanish highway along which Campos and Weyler and Blanco sent their troops against the insurgents, and along which Antonio Maceo and his daring band swept their reckless and fiery way, is still there, and, unless too much delayed by the huge country wagons, whose drivers will persist in going to sleep, the automobile driver may cover it, if he wishes, in a couple of hours from La Lisa to San Cristobal.

From La Lisa to Guanajay, fifteen miles or so, the roadway is level except for two or three short bits where it climbs or descends some gently rolling hill. Beyond Guanajay it enters a section, around Artemisa, which has long been known as "the garden of Cuba," an area of marvelous richness and fertility of soil. Beyond that there comes a belt in which the palmetto, the indication of poorer land, takes the place of the *palma real*, the evidence of a



A STRAIGHTAWAY STRETCH OF GOOD MACADAM ROAD, IN CUBA, WHERE AUTOMOBILING IS YET IN ITS INFANCY.



superior soil. Then comes the good land again. Through it all there runs the road, for about thirty-five miles, with hardly a perceptible rise or dip, smooth and hard. At Guanajay a branch road strikes off to Mariel and Cabañas, fifteen miles or so distant, on the north coast. This roadbed is excellent, but it crosses two or three ranges of hills, though none of them is at all difficult. Two or three other roads branch from the main route at points along its way, but they are short spurs and of no special interest.

In other directions from the city there are runs of from ten to forty miles, to Cojimar, to Managua, to Bejucal, and to Guines. Each has its special interest or attraction, and all of the roads are good. The Bejucal road runs through Santiago de las Vegas, a small place, where a vast number of dogs will do their best to get under the wheels. A branch from this road, near San Antonio de los Baños, climbs the hill to the monument under which Antonio Maceo is buried.

The Cojimar run, a short one, takes the tourist through a section of the suburbs of Havana where there may still be seen, on the tops and sides of the hills, the earthworks and entrenchments thrown up by the Spaniards to guard the city against an assault by Maximo Gomez and his troops. It runs through the city of Gaunabacoa, and ends in the little shore village of Cojimar, with its quaint and picturesque little fortress on the water's edge.

Six years ago all this country about Havana was dotted with the Spanish block-houses about which so much was said during the war. Few of them are left. Their absence as picturesque features in the landscape may be a cause for regret, but they were offensive reminders of an unpleasant experience, and the Cubans have torn them down.

Although all of these roads have their bits of particular beauty, the road to Guines unquestionably leads them all in that respect. This appears not so much in a superiority in general landscape views as in the immediate surroundings. It is an old road, and at frequent intervals the trees which border it have attained a large growth. Their interlacing branches form long tunnels of cooling shade. The dark green of the Indian laurel is at this season interspersed with the gorgeous brilliance of the royal poinciana and the graceful fringed blossom of the algarroba.

Each road has its towns, the typical towns of Cuba, having length, but no breadth, a string of one-story houses set immediately on the edge of the roadway, with the open fields behind them. It takes quite a town in Cuba to have side streets. If the driver of the machine be a respecter of dogs, his life will be a burden in a run by daylight, and filled with constant apprehension during a night trip. They sleep in the streets, and charge the car from corners, gutters and doorways. The record thus far indicates that, whatever care be taken, an increase in

the number of automobiles will considerably reduce the canine population of Cuba. But the island can spare a good many without serious loss.

It is also difficult to escape all of the chickens. They will try to upset a machine by getting in front of it. But, as annoyances to an automobile driver, these are the veriest trifles when compared with the ox wagon, whose motive power crawls slowly along in the middle of the road while the driver, sound asleep on his seat, is not to be roused by either the horn or the voice. It is useless to say anything to him when he is at last awakened. He cannot understand English or American profanity, and the Spanish provision in that line is quite unsatisfactory for American use.

Although the automobile sometimes menaces his life, sometimes kills his dog or his chickens, and often annoys and offends him in a variety of ways, the Cuban regards the machine philosophically and, on the whole, quite goodnaturedly. It is one of the strange contrivances used by those hurrying Americans, who, whether they have reason or not for doing so, can never get quickly enough where they wish to be. If a halt is made in town or hamlet, a crowd soon gathers, deeply interested in seeing water poured into the tank or a nut or a screw tightened up. On the road, the foot passenger will probably get as far as possible from the *carro del diablo*; the horseman will usually plunge into the gutter, or up a bank, or into a thicket, where he will dismount and hold firmly by the bit a horse who would hardly wink if the machine were to explode alongside him. If an accident happens, as they sometimes do with automobiles, all possible assistance will be given.

The principal trouble with these roads is that a good road is always an invitation to speed over it. There is pleasure in the speed, but it is secured at the cost of losing sight of much that is worth seeing. In days to come, when Cuba has completed her pro-

jected system of highways, the devil wagon will be a common conveyance in the island. Cubans and Spaniards will buy them, and Americans will take their machines there for the pleasure of using them.

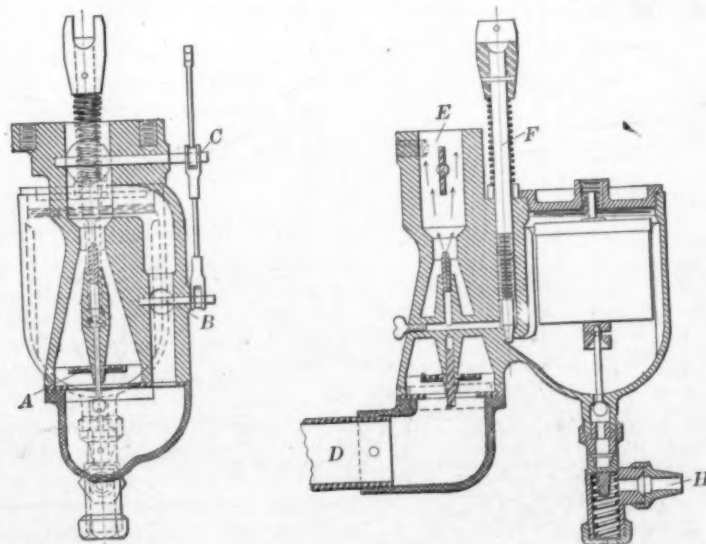
### Franklin Carbureter.

The accompanying line engravings show the construction of the automatic float-feed carbureter used on the 1906 Franklin cars, manufactured by the H. H. Franklin Manufacturing Company, of Syracuse, N. Y. Automatic action is secured by an air valve, *A*, normally kept on its seat by a spring and lifted by the suction of the motor; and by an auxiliary air valve, *B*, connected with the throttle lever *C*, so that when the throttle is opened the auxiliary air valve is opened at the same time. The air inlet is at *D* and the motor supply pipe is attached at *E*. The needle valve controlling the supply of gasoline to the spray nozzle is at *F*. Gasoline enters the float chamber through the bottom, the pipe connection being at *H*. The throttle is actuated by the governor on the engine, except in the case of the Franklin runabout, which is not fitted with a governor.

### Sprung a New Idea.

F. W. Oliver, of South Bend, Ind., Tuesday night sprung a new one in the line of automobile construction before the local board of trade. The machine consists of an ordinary shaped car, the wheels of which are nearly a foot wide. The propulsion is by a wheel within each wheel, and the promoter says either gasoline or a storage battery can be used. It is designed to run over sandy and rough roads where the ordinary touring car cannot travel.—Pontiac dispatch to Kalamazoo (Mich.) *Gazette*.

The Chicago *Herald* says "the automobile has come to stay," while anybody knows it has come to go.—*Exchange*.



VERTICAL SECTIONS OF CARBURETER USED ON 1906 FRANKLIN CARS.

## Pope-Toledo Improvements for 1906.

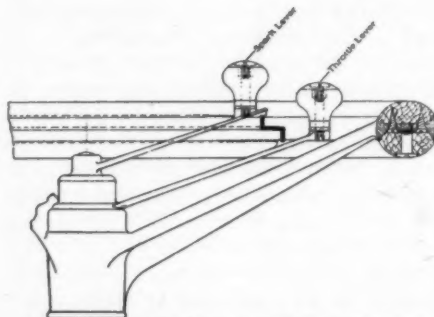
WITH the addition of a new car of 35-40 horsepower, there will be four machines in the Pope-Toledo line for 1906—a 20-25-horsepower, side-entrance car, a 30-35-horsepower car with front entrance through a tilting seat, the new 35-40-horsepower, side-entrance car, and a 40-60-horsepower, side-entrance machine. The Pope Motor Car Co., of Toledo, O., has adhered in the main to constructional methods used with success in the past; but a number of important details have been altered and improved. In general appearance the car is practically unchanged.

In its general arrangement the Pope-Toledo 35-40-horsepower car follows current engineering methods, having four-cylinder, water-jacketed engine, cone clutch, three-speed sliding gear transmission driving direct on the high speed and side chain drive; the frame is of pressed steel. The wheelbase is 104 inches and the tread standard. The engine has individual cylinders with corrugated copper water jackets, and further differs from the majority of large motors of this type in having automatically functioning inlet valves instead of mechanically operated valves. High compression is used and special attention is given to the fitting of pistons and rings. The exhaust valves are made of pure nickel, and the manufacturers state that this has given the utmost satisfaction, being free from warping and unaffected by the heat of the exhaust gases. The engine develops, the manufacturers state, one horsepower for every 8.8 pounds of its weight, and one horsepower for every 54 pounds weight of the complete car.

Flexibility is one of the qualities the motor is said to possess in a large measure. In a recent test of the new car runs were made over a measured distance, there being six persons in the car. After running at the rate of 5 1-4 miles an hour, on the high gear, the engine was accelerated

and the car covered a mile at the rate of 62 miles an hour.

The high ratio of horsepower to weight is partly due to the use of special steels, with which experiments have been in progress for some time, and to the free use of aluminum, of which are made the hood, mudguards, crankcase, transmission gearcase, clutch, hub caps, the entire fan, pump and fan pulleys, lubricator and other small parts. In the new car the front axle is of I-beam section, instead of the tubular form previously used; the rear axle is also of I-beam section. The Lemoine steer-



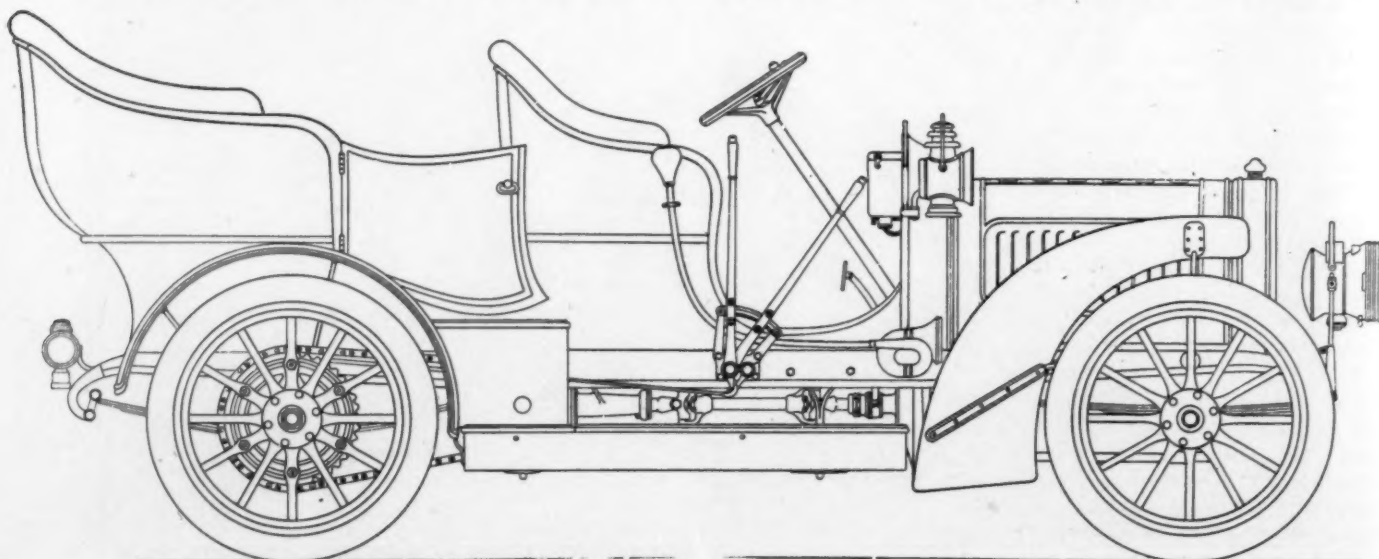
ing knuckles have been made stronger, and the ball bearings on which both front and rear wheels run have been fitted with an improved adjusting device which is reliable and easily set. As shown in the line engraving of the rear axle end and parts attached to it there are two internal expanding brakes working in a drum in the driving sprocket; a flange on the drum is drilled to receive the ends of the "pegs" or pillars by which the sprocket is attached to the rear wheel. One brake is operated by pedal and the other by side lever. Both axles are dropped.

The bearings supporting the inner ends of the divided jackshaft, in the differential

gear, have been lengthened, so that a very stiff support is afforded the shaft and the two sections are kept rigidly in alignment. The material of which the jackshaft is made is a special high tensile steel; the gears are of the same material. The tubular support carrying the ball bearing for the driving-shaft has been made longer and stronger to give better support to the shaft; the same is true of the supports for the outboard bearings of the jackshaft, which runs on ball bearings placed close to the sprockets. The squared shaft upon which the shifting gear slides is heavier than last year, and is of steel having a tensile strength of 110,000 to the square inch, the same material being used in the gear.

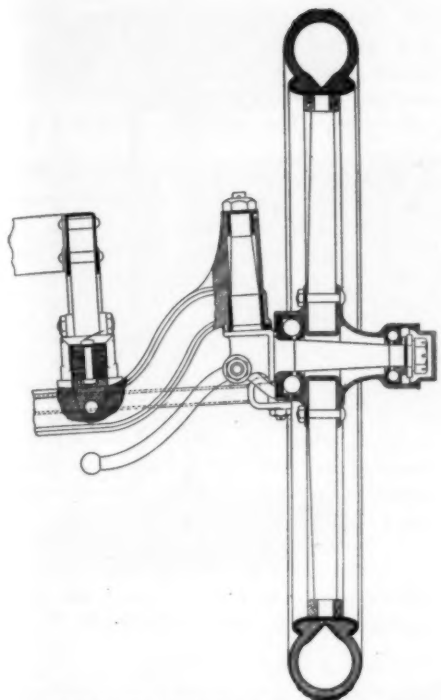
Heavy reinforcing webs have been formed on the bottom of the gearcase to give great stiffness and insure the correct meshing of the gears, notwithstanding heavy strains on the case. An interlocking device has been added so that the gears cannot be shifted until the clutch has been disengaged; when the clutch is let in a bolt enters a hole in the gear shifting rod, so that until the clutch is withdrawn completely and the bolt is clear of the hole in the rod, the gears cannot be started. This arrangement also keeps the gears in place while running.

Gasoline is fed by gravity to the carbureter from a small tank on the dashboard; this tank holds sufficient gasoline for about 75 miles running. A gauge on the tank shows the height of the fluid. When the level drops, a fresh supply of gasoline is forced by air pressure from the main tank, situated at a lower level, into the small tank. The pressure is supplied by a hand pump, the handle of which rises through the partition between the two front seats, the pump being below. A pressure of ten pounds to the square inch, as registered on a small air gauge on the dashboard, is required to lift the fuel from the lower tank to the upper one. Controlling valves, whose handles project through the front board of the front seat, are used to manipulate the air supply; when the gasoline tank is empty



POPE-TOLEDO 35-40-HORSEPOWER TOURING CAR FOR 1906, TYPE XII.





SECTION OF FRONT WHEEL AND END OF FRONT AXLE.

the top valve is opened, placing pressure in the main gasoline tank and forcing the fluid into the auxiliary receptacle; when the lubricator requires filling, or the crankcase requires a charge of oil, the air pressure is turned into the appropriate leads and forces the oil through the proper channels. The pump, air reservoir and valves are clearly shown in the accompanying line engraving.

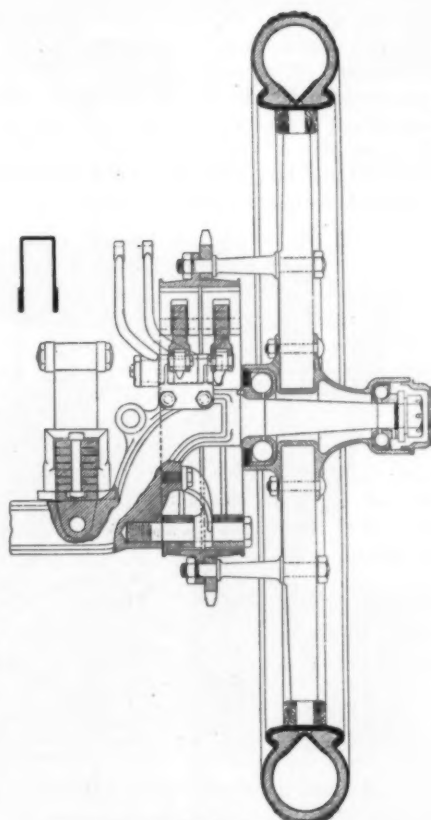
A new form of button for releasing the brake lever and the change-speed gear lever is fitted; this consists of a short cylinder fitted into a bore in the top of the lever and pressed upward by a spring. When the button is pressed down there is nothing to catch the hand or a finger; with the old-style mushroom-headed button a painful pinch was frequently sustained.

Larger steering wheels having become popular, the wheel on this car has been made 16 inches in diameter instead of 14 inches, as formerly. The rim is now made of Circassian walnut, a beautifully marked wood with a slightly greenish color that gives a handsome finish; the knobs on the throttle and ignition levers, which are on top of the steering wheel, are of the same wood instead of solid brass, as formerly. The spider is of aluminum, a polished aluminum strip showing between the halves of the wood rim, making a handsome wheel.

The manufacturers state that a car of the new model has been in constant use, under test, since the first of July, carrying two persons and 800 pounds dead weight in the shape of sand bags. No weaknesses developed during runs of the most trying kind. With a view to testing the efficiency of the machine a test run of 782.7 miles was made through the sandy roads of northern Indiana, good macadam roads in the central part of the state, where high speeds were ob-

tained, and the mountainous highways in the southern part of the state. During this run the fuel consumed amounted to 49 gallons and 3 quarts, giving an average of 15.8 miles per gallon. During the last 210 miles of the run, from Richmond, Ind., to Toledo, O., 10 gallons of gasoline were used, giving a consumption of 1 gallon for 21 miles running. At the conclusion of the entire 8,000 miles running the motor and transmission were taken apart for examination, and were found to be in as good condition, apparently, as when the car started out.

In outward appearance the car is practically the same as the 1905 Pope-Toledos,



SECTION OF REAR WHEEL AND END OF REAR AXLE.

whose characteristic outlines are so well known to automobilists. The high, ridged bonnet and radiator are retained, as are the rounded rear fenders, the box running-boards and the familiar curves of the body.

### Glide Models for 1906.

PEORIA, ILL., Nov. 25.—Three models of Glide cars will be made for next season by the Bartholomew Company, of this city, which is making arrangements for the production of 1,000 cars during the season.

A special study of the transmission problem has been made by the company, which has succeeded in designing and building a type of planetary gear suitable for its heaviest cars, and all three models of the Glide will be fitted with this gear. Any doubt as to its efficiency that may be entertained by a visiting agent or customer is dispelled by

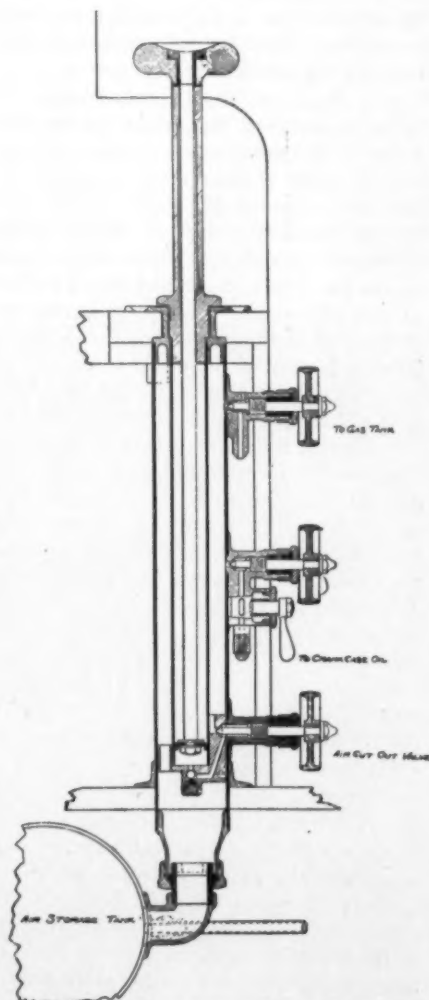
sending him out in one of the cars to drive up, down and over some of the many hills over which the city of Peoria is spread. A Chicago sales agent who came down here to investigate the transmission was so thoroughly convinced that before he left he placed his order for forty-five machines. He had come here prejudiced against all types of change speed gear except the sliding gear.

The Glide planetary transmission avoids the use of leather or fiber altogether, having metal-to-metal friction faces in which hard metal rubs against soft metal. All working parts are encased so that they can be flooded with oil, thereby providing a smooth change of speed, especially desirable on hills such as are common here. Every part of this planetary mechanism is made in the Bartholomew factory, and some of the parts are protected by patents. The transmissions will not be sold separately.

Another original feature of the 1906 Glide models is the frame suspension. To prevent side sway, the rear springs are attached to the side frames by trunnions.

The three new models consist of a large touring car, a light touring car and a "Glide-about."

Model E, the large touring car, will be



SECTION OF POPE-TOLEDO AIR PRESSURE HAND PUMP.

driven by a four-cylinder, 4 1-2 by 2-inch engine transmitting through a multiple-disc clutch, planetary change gear giving two speeds forward and reverse, and shaft and bevel gears. It will seat five passengers. The weight complete is 2,200 pounds.

Model C is a light touring car, with 5 by 6-inch single-cylinder engine. It seats four passengers and weighs 1,550 pounds.

Model F Glide-about has a 5 by 6-inch,

single-cylinder engine, individual seats for two passengers, and weighs 1,100 pounds.

The Bartholemew company has been engaged in designing a car for the use of canvassers of city wholesale and other houses. It is a car that is intended to be a great help to a man who follows such an avocation.

Of nearly 150 autos owned in Peoria, two-thirds are declared to be Glide cars built by the local manufacturers.

## English Daimlers for American Market.

ARRANGEMENTS have been practically completed for the establishment of an American agency for the English Daimler cars, manufactured by the Daimler Motor Company, Ltd., of Coventry, England; the agency will confine its business to importing the English-built machines, not as yet attempting to manufacture. Temporary offices have been established in the Times Building, New York, J. E. Demar, general manager of the new company, states that owing to the great demand for these cars in the home market, there are comparatively few available for export, though the works are operated to their full capacity. Some changes have been made in the car in its English form, and a description of its main features, with illustrations, is appended.

The chassis of the English Daimler car is so constructed that while the standard motor is 28—36-horsepower, a 30—40 motor may be fitted if desired. The smaller engine has a bore of 4.33 inches and a stroke of 5.90 inches, and develops 28-horsepower at 750 revolutions a minute; the larger engine has a bore of 4.88 inches and a stroke of 5.90 inches, and develops 30-horsepower at 650 revolutions a minute. A rather striking feature of the motor is that all the valves, valve gearing and piping—exhaust, inlet and cooling water—are on the left hand side, leaving the opposite side of the engine clear except for the nipples for the cylinder oil feeds and the water jacket drain cocks. The cylinders are cast in pairs with integral water jackets; while the heads of the cylinders are integral with the cylinders. The water jackets are open on top, a cover being fitted over each pair of jackets, with water pipe connections cast on the covers. Below the jackets the cylinder barrels are separate, but are joined at the bottom by the flanges through which the holding-down studs pass.

The valves, all of which are of the same size and mechanically operated, are so placed that their stems are not vertical, but at an acute angle with the cylinders, the lower ends of the stems being farthest from the cylinders. The object of this arrangement is to reduce the surface area of the combustion chamber, and at the same time to make the water jacketing of the valve chambers more effective. The two inlet valves of each pair of cylinders are placed adja-

cent to one another, between the exhaust valves; each pair of cylinders is served by a single branch of the supply pipe from the carburetor. The usual inspection caps are placed over the valves, and the spark plugs are placed in the caps over the inlet valves.

A peculiar feature of the Daimler motor lies in the fact that the valve-operating mechanism—gears, shaft, cams, rollers,



ENGLISH DAIMLER 30-40-HORSEPOWER PHAETON FOR 1906, WITH CAPE CART HOOD.

push-rods and levers—are all exposed, the housing considered essential by many motor manufacturers being conspicuously absent. Fiber and brass gearing is used; the camshaft is driven from the rear end of the motor, the pinion on the crankshaft being between the flywheel and the crankshaft bearing. Small levers are interposed between the cams and the valve stems, the cams acting on the levers, and the levers, which are fitted with rollers, acting on the valve stems. On the front end of the camshaft is a bevel gear by which the vertical timer shaft is driven; the gears are enclosed in an oil-tight casing which is continued upward, in the form of a sleeve through which the vertical spindle passes, until it meets the casing which forms the outer part of the timer. The sleeve and the outer part of the timer are rotatable through an arc sufficient to give the necessary range of ignition timing; the throttle, just above the carburetor on the left side of the motor, is connected by a rod with an arm on

the timer spindle sleeve, so that throttle and ignition are regulated together by a single lever working over a stationary notched quadrant on the top of the steering wheel. The engine is without a governor.

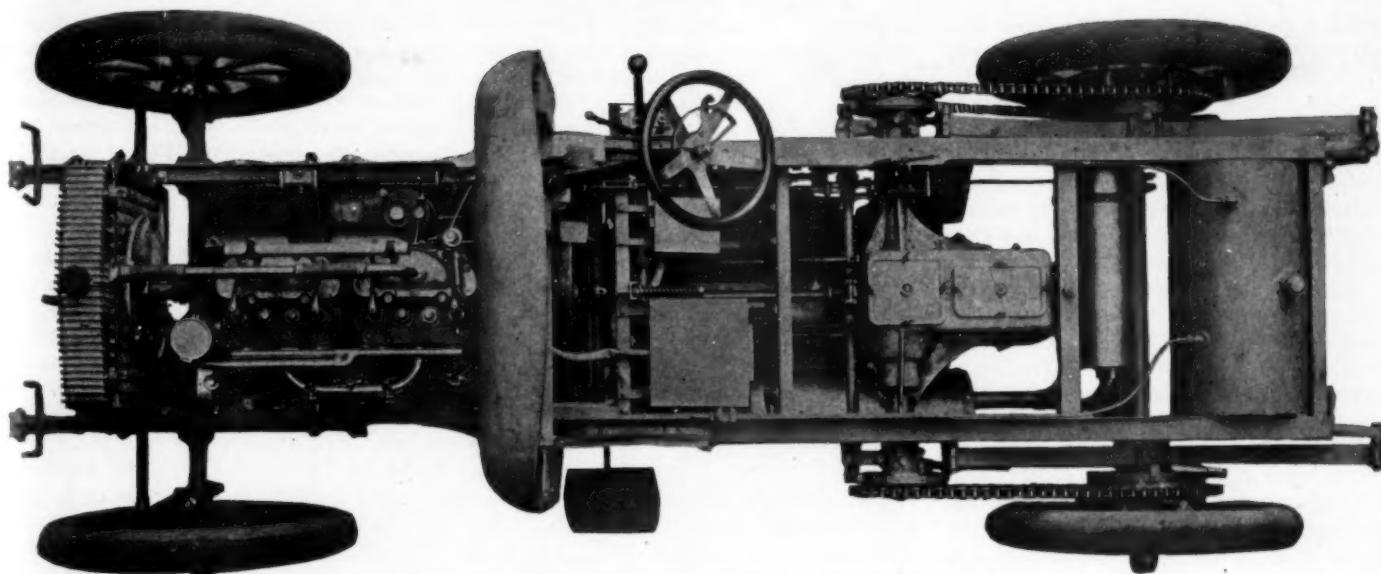
High-tension ignition is used, a single vibrator coil serving all cylinders through the distributor referred to; ordinarily batteries supply the current, though a high-tension magneto can be furnished, with or without the batteries. A special type of generator is also manufactured for this car, and can be used not only for keeping storage batteries charged, but also for electric lights. Both armature and field magnets revolve; when the speed of the armature becomes too high the fields are caused to rotate in the same direction, thus maintaining a constant relative speed.

A horizontally divided aluminum casting forms the crankcase of the engine, the bearings—one at each end and one intermediate bearing—being attached to the up-

per half, so that the removal of the lower half of the case has no disturbing influence on any of the fastenings or adjustments. White metal bearing surfaces are used in the crankshaft and crankpin bearings; the piston pin as well as the "little end" bearing in the steel connecting-rod are of hardened steel. Pistons are very long and have four rings each; there are only two grooves, two rings being placed in each groove, all at the top of the piston. The rings have lapped joints, the laps being extremely long and very carefully fitted.

A gear pump, chain-driven, circulates the cooling water; the water passes from the top of the jackets to the top of the radiator, and out of the bottom of the radiator into the jackets on the left hand side very near the top. The radiator is of peculiar construction, having a ribbed aluminum tank at the top and a brass tank at the bottom, with gilled copper tubes, standing vertically, opening through from one tank to the other. One of the advan-





PLAN OF CHASSIS OF ENGLISH DAIMLER 28-36-HORSEPOWER CAR.

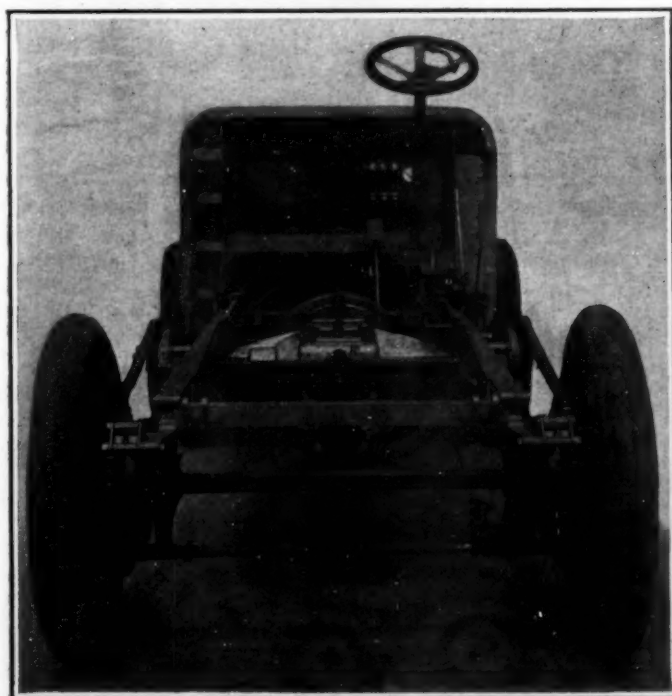
tages of this type of radiator is that a leaky tube can be removed and plugged, thus avoiding the continual loss of water without perceptibly interfering with the efficiency of the cooler. Severe tests by slow running in dense street traffic have shown the radiator to be exceedingly efficient in keeping the water cool. A fan placed behind the radiator is belt-driven from the crankshaft, the fan bearings being attached by brackets to the front of the engine.

The starting crank turns the crankshaft through a chain and pair of sprockets, the sprocket on the crankshaft being mounted on a ratchet so that the chain and wheels are at rest at all times except when the crank is being turned. The upper sprocket

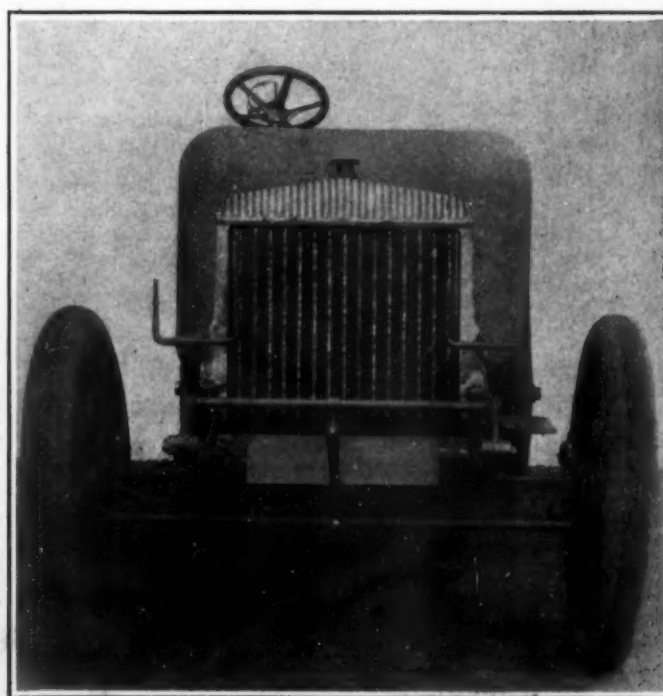
is directly over the end of the crankshaft and is carried in a bracket cast for the purpose on the upper half of the crankcase. The outer end of the starting handle shaft is supported in a bearing carried by a special crossbar in front of the radiator; the shaft passes through the radiator near the bottom.

The carbureter, on the left hand side of the engine, is supplied with gasoline from a large cylindrical tank hung on the rear end of the frame; the pressure of the exhaust gases is used to raise the fuel to the height required. A small pipe leads a portion of the gases to the tank from the exhaust pipe of the two rear cylinders. The carbureter has the usual float; just above

the spray nozzle is fitted an inspection plug, so that the nozzle can easily be examined by unscrewing the plug. The regular air supply is warmed by one of the exhaust pipes; the auxiliary air supply is taken in cold. A specially constructed valve controls at the same time the passage of the mixture to the cylinders and the passages through which the cold and the warm air enter, in this way maintaining a mixture of uniform quality. The valve is of the compound piston type, and, as has already been said, is connected with the ignition timer, so that both work together under the control of the lever on the steering wheel. A small cock is fitted to each branch of the supply pipe leading to the engine, between



REAR END OF DAIMLER CHASSIS, SHOWING CHAIN DRIVE.



FRONT OF DAIMLER 28-36-HORSEPOWER CHASSIS, SHOWING RADIATOR.

the carbureter and the cylinders, and final adjustment of the quantity of air required is made by opening or closing these cocks. The adjustment, once made, is practically permanent, and no provision is made for altering it while the car is in motion. The exhaust gases from the engine are led first into an expansion chamber alongside the engine and then to two mufflers, one after the other.

Following the transmission of power from the engine to the rear wheels, next in order comes the clutch. This is a leather-faced cone with an aluminum body; springs under the leather give smooth and gradual engagement. The clutch fork has a double ball-bearing thrust.

The casing enclosing the transmission and differential gearing is placed far to the rear, and, contrary to usual practice, the jackshaft is at the front end of the casing; the result is that the jointed clutch shaft is unusually long. The gear casing extends, in tubular form, clear to the sprockets on the ends of the jackshaft, the ends of the tubes carrying the ball bearings that support the outer ends of the shaft. The casing is supported at three points only—the outer ends of the jackshaft casing and the rear end of the gearcase. The primary shaft, to which the clutch shaft is coupled, enters the gearcase below the jackshaft; the primary shaft is squared inside the case and carries the sliding pinions. Directly above lies the secondary shaft carrying the fixed gears and the bevel gear through which the jackshaft is driven; both shafts revolve in ball bearings. The change-speed gearing is of the selective type, there being two pairs of sliding pinions on the squared shaft, one pair giving first and second, and the other third and fourth speeds. One lever controls the forward speeds, while the reverse, engaged by throwing a wide-faced intermediate pinion into mesh with the low-speed gears, is operated by a separate lever. Each of the sliding pairs has its individual collar, fork and shifting rod, so connected that when the hand lever is swung to the left and moved forward, the lowest speed is engaged; moved to the opposite end of the same slot, the second speed is thrown in. To get to third speed, the lever is brought to the neutral position at the center, when it can pass through an opening between the slots. On entering the outer or right hand slot, the lever engages with the connections of the sliding pinions giving third and fourth speeds; third speed is engaged when the lever is pushed forward, and the fourth or highest speed when the lever is pulled backward to the limit of its movement. Drive is always through one pair of gears, except in reversing, when an extra gear is employed. The reversing lever is placed beside the forward speed lever; the latter has a large ball handle.

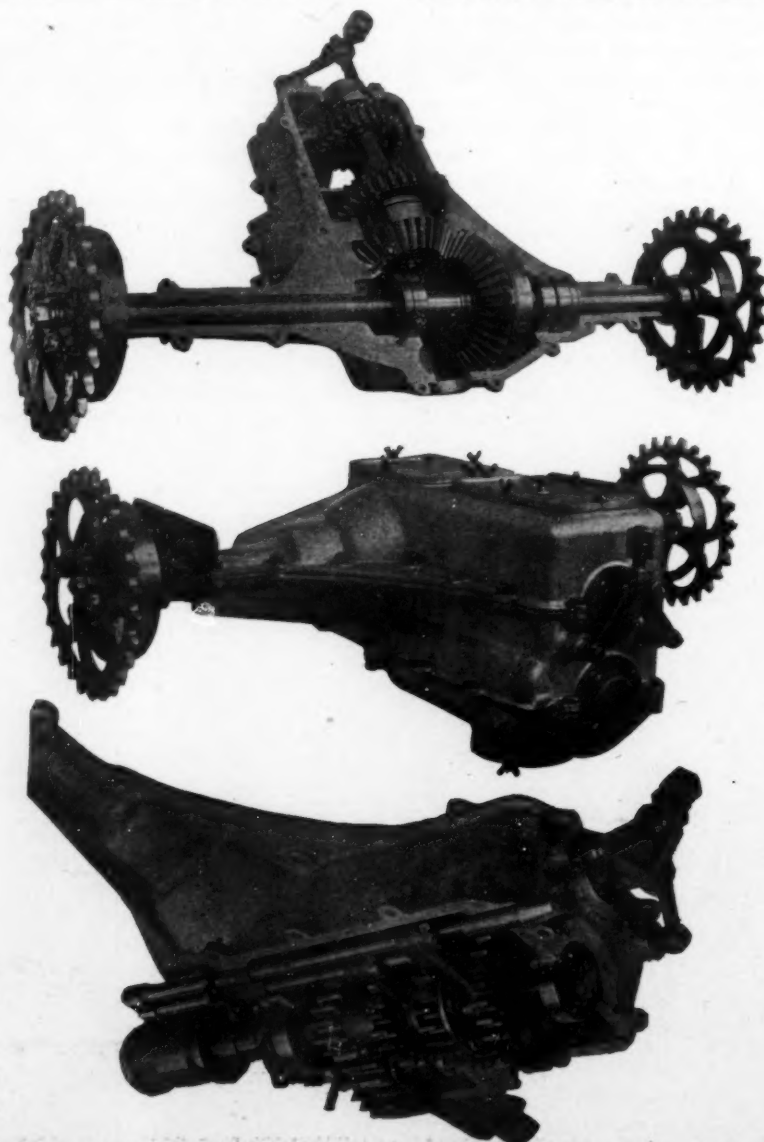
Two large hand-holes, with suitable covers, are placed in the top of the casing, and the entire bottom of the casing is also

removable, as is shown in the lowest of the three illustrations showing the gearcase and sprockets. The entire gearing runs in oil. Brake drums are fitted to the outer ends of the jackshaft, the constricting bands being under the control of a pedal. The differential is driven direct by the large bevel gear. The main frame of the car is of wood with longitudinally ribbed steel fitch plates set vertically. A peculiar feature of the frame is that the steel plates are inside the frame from the dashboard back; but forward of the dashboard steel angles are riveted inside the frame to support the engine. The effect of this arrangement is to give a frame that is narrowed in front without any bending. The springs are semi-elliptic and very long. Both axles are straight; the rear axle is of bar steel, while the front axle is of I-beam section. The steering knuckles are particularly neat and substantial in design. The ends of the axle proper carry the pivots, while the yokes are forged integral with the stubs upon which the road wheels are mounted. The wheels

are all 35 inches in diameter, have 5-inch tires and run on ball bearings. The steering gear is of the worm and sector type, enclosed in a dust-proof casing, and is, of course, irreversible. The connecting rod between the steering knuckles is placed in front of the axle; the joints are of the ball-and-socket-type, with spring buffers.

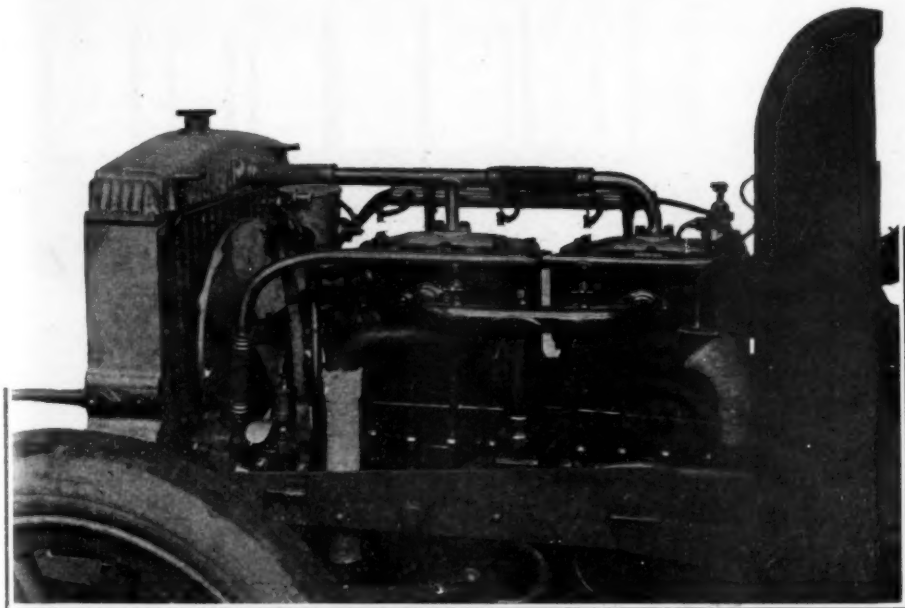
Emergency brakes, consisting of bands and drums and operated by the usual hand lever, are placed on the rear hubs. An unusual place for the coil-box is under the floor of the car on the right hand side, immediately under the driver's feet; on the opposite side, also under the floor, is the battery box. The gasoline tank, at the rear, holds 14 gallons. Beside the engine is the lubricating oil tank, from which oil is forced to the lubricator on the dashboard by exhaust pressure; the lubricator supplies oil to the cylinders and the crankcase, and has a cam-plate arrangement by which all the feeds can be closed at the same time.

The body is of the popular side-entrance touring type, with plenty of room for the



THREE VIEWS OF DAIMLER COUNTERSHAFT AND TRANSMISSION.—The upper engraving shows intermediate portion, carrying upper gear shaft; central view shows gear box complete with covers, and bottom engraving shows lower gear shaft with base casting of box removed.





ENGINE OF 28-36-HORSEPOWER DAIMLER, SHOWING INLET AND EXHAUST PIPES.

passengers. The front seats are divided, and the chauffeur's seat is placed lower than the other front seat. The dashboard is concave, and the bonnet almost square. Though straight lines predominate in the body de-

sign, the arrangement is such that there is no appearance of stiffness or awkwardness; on the contrary, the car is attractive in appearance, and is, at the same time, comfortable to ride in.

## M. Brasier's New Designs for 1906.

PARIS, Nov. 17.—The work of a designer of international race winners like M. Brasier is always followed with interest by the trade, and the announcement of the changes in the 1906 models is therefore of more than ordinary interest. There will be only three sizes of Richard Brasier cars marketed, one of 15 horsepower, one of 25 horsepower and one of 50 horsepower, for regular trade.

In the motor design M. Brasier has adopted the offset cylinders, a feature of gas-engine construction in which Mr. Duryea in America was a pioneer, though in steam-engine practice the idea goes back to the middle eighties, when the Westinghouse shops adopted this form of construction for high-speed, single-acting, steam engines, with excellent results. In order to further reduce the frictional losses against the cylinder wall, M. Brasier also determined to materially increase the lengths of his connecting rods. As there is a smaller angle of thrust for a given stroke, there is also a reduced lateral pressure against the cylinder, and a consequent gain in efficiency, friction being reduced, and the general balancing of the engine much improved.

### PISTONS MADE VERY LONG.

The pistons are made very long and light to increase the frictional area, and consequently decrease the wear without impairing the smoothness of running of the engine. This has a further advantage. The piston-pin bearing works at a greater distance from the top of the piston and is consequently

less affected by the intense heat of combustion, while a longer piston means less oil passing up its walls and above it to soot the compression chamber and sparking mechanism and to cause smoke and odor.

Exhaust and inlet valves are alike, and consequently interchangeable. They are mechanically operated, and instead of being located on opposite sides of the cylinders are all on the same side, as is usual in Renault practice. This has the advantage of permitting the use of a single camshaft and is said to have the effect of giving a more "compact" charge of gas; that is, it is not so spread out as when opposite valves are used, and ignition is more rapid, giving a faster running engine, and one in which great variations of speed are possible. At least this much is said in support of the change.

### WATER-COOLED EXHAUST PIPE.

The gases coming from all four exhaust valves are led into a single longitudinal casting which is water jacketed, this leading in turn to the muffler. The object of this construction is to reduce the tendency of the exhaust valves to overheat, to increase the silence of the running of the engine, to reduce the back pressure at the muffler, by contracting the charge, and also to keep a cleaner and cooler under bonnet, this last advantage being distinctly felt when the engine has to be tinkered with occasionally, especially by one who on occasion has left sundry bits of skin on a tangle of red-hot exhaust pipes.

The camshafts are made stouter in diameter than they previously were, and are cut from the bar with the cams formed into it.

The 15-horsepower axle is stronger than last year. The small level-driving pinion is carried on ball bearings and has ball-thrust bearings. The axle tubes proper are carried at their outer end by two ball bearings fitted inside the wheel hub, so that they carry the load, the internal shafts simply having to transmit the driving effort.

The frame is of pressed steel stiffened by a tubular subframe, as has always been the Brasier practice. The front axle has not been changed, except for general strengthening.

### BOTH SYSTEMS OF WATER COOLING.

The cooling is by natural circulation for the 15- and 25-horsepower sizes, while an unusually powerful pump is used on the larger car. The radiators are of the gilled tube type, as in 1905, but are larger; the tank surrounds the entire radiator. A belt-driven fan assists the air draught through the radiator in the two smaller models. In the 50 horsepower, the large pump and the large radiator, which is the same as that on the racers, make a fan unnecessary.

The brake drums are larger than before and are now made of forged steel instead of castings, as heretofore, this reducing the tendency to seize and also the wear.

Before closing this article it should be stated that, contrary to rumors, the Richard Brasier concern will produce racing cars for the 1906 season. These racers will probably be propeller shaft driven, as there is not the heavy load that is carried on touring cars on these machines. M. Brasier is conducting exhaustive tests which may be made public later, in order to settle whether he will use a shaft or side chains.

## Stevens-Duryea Limousine.

The Stevens-Duryea four-cylinder touring car for 1906 is identical in design and construction with the 1905 machine, no changes having been made either in the mechanical features or in the body. A limousine body, however, has been designed and placed on the regular touring car chassis, and the combination, which is illustrated by the accompanying engraving, is called Model R. The interior is fitted with the many little conveniences that go to make up the well-appointed closed car, and on the roof is a baggage railing. A description of the mechanical features of the car was given in THE AUTOMOBILE of May 18 last; a brief recapitulation will serve to refresh the reader's memory with regard to the main points of interest.

The three-point suspension system is used in attaching the engine and the transmission gearcase to the frames of the car. The crankcase and gearcase are not separate, however, but are rigidly connected by a tubular casting containing the multiple disc clutch. Thus the engine and transmission gear, with the clutch between them, are a

unit, and the whole system is suspended from three points, two being the arms cast on the front of the engine crankcase and the third on the rear end of the transmission gearcase, which is bolted to a cross frame. Drive is by propeller shaft and bevel gears. The tubular connection between the crankcase and gear case makes it necessary to place the flywheel in front of the engine, contrary to the usual practice of builders of vertical motors.

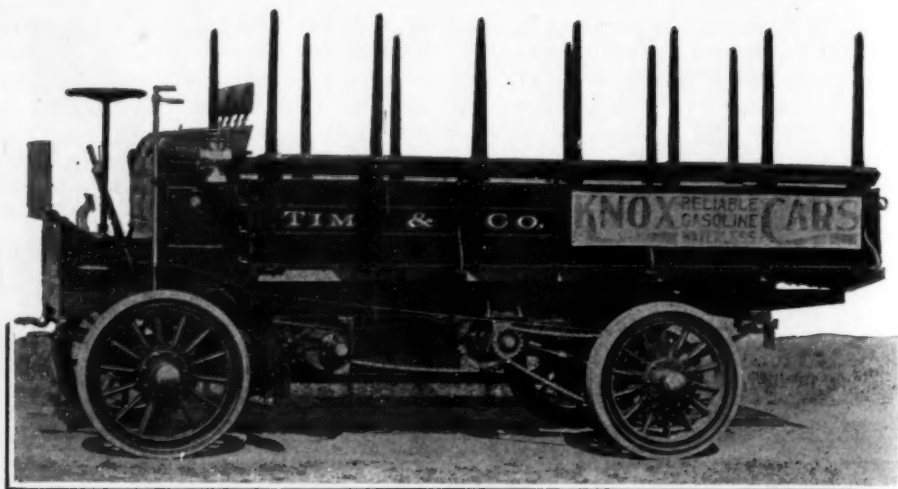
The motor has separately cast cylinders, water cooled, a gear-driven centrifugal pump maintaining the circulation and the customary radiator and fan taking care of the cooling of the water. The valves are all mechanically actuated, are all exactly alike and interchangeable, and are all placed on the same side of the engine—the left.

Ignition is by jump spark, dry batteries furnishing the current; a quadruple coil is placed on the dashboard. Lubrication is effected through sight feeds on the dash; the handle for turning on the oil is also the switch handle, so that the car cannot be started without turning on the oil.

The multiple disc clutch has alternate plates of plain steel and leather-faced steel; it is used without lubrication, and is extremely smooth and easy in starting the car, while holding solidly when fully engaged.

The car has pressed steel side and cross frames of heavy stock, strongly braced; the side frames are not offset. The wheels, 30 inches in diameter, have 3 1-2-inch tires and run on roller bearings. Expanding hub brakes operated by a side lever are placed on the rear wheels and are completely enclosed; the regular service brake is a constricting band operated by a pedal. Front axle is tubular; springs are all semi-elliptic, long, and easy in action.

The transmission gear is of the sliding type, giving three speeds forward and a reverse, with direct drive on the highest speed. A single side lever controls all the



KNOX THREE-TON TRUCK, DRIVEN BY 16-20-HORSEPOWER OPPOSED AIR-COOLED ENGINE.

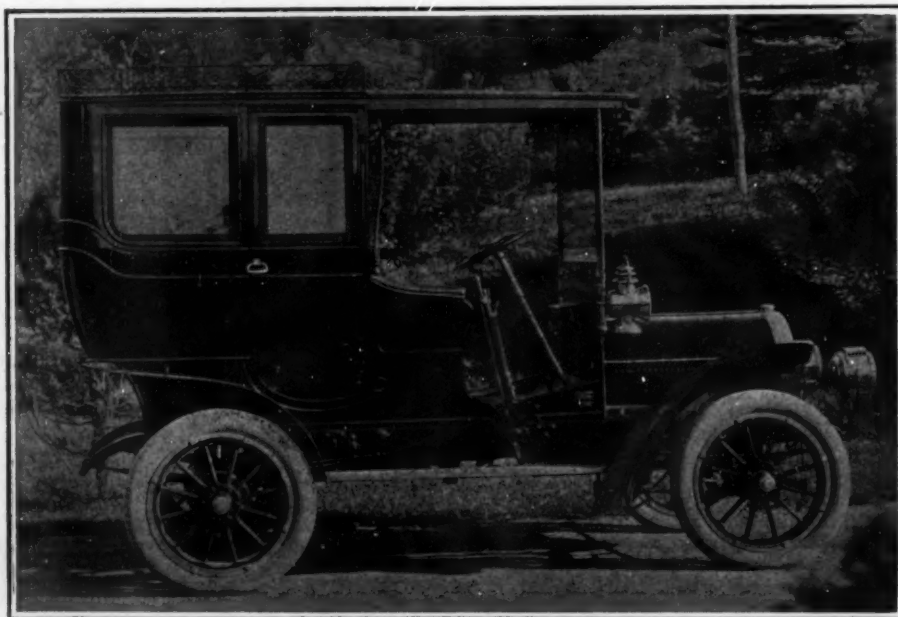
speeds. Gears are of hardened steel and are lubricated by oil carried in the gearcase; pockets are formed in the casing to contain the oil used to lubricate the transmission shaft bearings.

The side-entrance body of the touring car is made of hammered aluminum plates, unannealed and stiff; five passengers can be carried in the comfortably upholstered seats. Wheelbase is 90 inches and tread 54 inches. There is ample clearance under the car, the lowest part being 14 inches above the road surface. The car weighs less than 1,700 pounds.

### Knox 3-Ton Truck.

The gasoline truck illustrated herewith is one of the new three-ton machines manufactured by the Knox Automobile Co., of Springfield, Mass.; this particular machine was recently delivered to Tim & Co., manufacturers of collars and cuffs, Troy, N. Y. The truck has a maximum rated carrying capacity of 6,000 pounds and weighs, empty,

4,800 pounds; the chassis alone weighs 3,500 pounds. The over-all length is about 15 feet 6 inches, and the load-carrying part of the body, back of the seat, is 12 feet long; over-all width, 7 feet; inside width of the body, 5 feet 6 inches. Double opposed air-cooled cylinders of 5-inch bore and 7-inch stroke are used in the motor, which is rated at 16-20 horsepower and drives the truck at a maximum speed of ten miles an hour. Planetary transmission gearing gives two forward speeds and one reverse; drive is by side chains, the solid rear axle of 2 1-2-inch square section being of the "dead" type. Steel of I-beam section is used for the front axle. The wheelbase is 111 inches and the tread 60 inches; wheels are 36 inches in diameter and are shod with solid rubber tires. Emergency brakes act on the rear hubs. Omnibus, sight-seeing or other bodies may be mounted on the same chassis if desired, and by altering the gearing the machine may be given a maximum speed of fifteen miles an hour if the weight is proportionately reduced.



STEVENS-DURYEA MODEL R 20-HORSEPOWER CAR, WITH LIMOUSINE BODY.

The importation of automobiles by Portugal shows a growth during four years from a value of \$37,915 in 1901 to \$229,265 in 1904. During the first five months of the present year the imports amounted to a value of \$81,125. Most of the automobiles sent to Portugal were built in France, 80 of the 118 imported in 1903 being of French manufacture. The United States ranked second with thirteen, Italy third with ten and Germany fourth with three. Since that year the record of origin has not been given. The duty imposed by Portugal on finished autos is \$120, and on chassis \$70. Three principal concerns are engaged in the automobile business in Lisbon as follows: A. Beauvalet & Commandita, 31 Praça dos Restauradores; Sociedade Portuguesa, 4-26 Rua do Jardim do Regedor; F. Street & Co., 156 Rua do Poço dos Negros.

The three leading dealers in Oporto are: Teixeira & Irmao, Rua da Sa da Bandeira; Empreza Automobilista do Porto, Rua de S. Lazaro; Joao Garrido, Rua de Passos Manoel.



## Garden Show to Have 220 Exhibitors.

**A**LL available space in Madison Square Garden has been allotted to 220 exhibitors for the Sixth Annual New York Show, to be held from January 13 to 20, 1906. More than a score of applicants are still unprovided with display space.

There will be thirty-two exhibitors of pleasure vehicles on the main floor and ten more in the exhibition hall on the Madison avenue end of the building.

Nine builders of commercial vehicles will have displays in the basement, constituting one of the largest exhibitions of industrial automobiles ever seen in this country.

The tire and accessories exhibitors will have booths in the balconies, elevated platforms and in the concert hall, as in last year's show.

Owing to the fact that the aisles will be wider and some of the spaces larger than formerly, there will be about thirty fewer exhibitors than last January, making it easier for visitors to circulate more freely and comfortably.

Great plans are being made for the harmonious and impressive decoration of the great hall, which will be announced later.

Following is the complete list of exhibitors who have been allotted space by George Pope, chairman; M. I. Brock, C. R. Mabley and M. L. Downs, of the show committee of the Association of Licensed Automobile Manufacturers:

Henry A. Allers & Co., American Ball-Bearing Co., American Darracq Automobile Co., American Electric Novelty & Mfg. Co., American & British Mfg. Co., Anderson Spark-Plug Co., Apperson Bros. Automobile Co., Atwater Kent Manufacturing Works, Atwood Manufacturing Co., Aurora Automatic Machinery Co., Auto Brass & Aluminum Co., Auto Import Co., Auto Supply Co., The Autocar Co., The Autocool Co., THE AUTOMOBILE, Automobile Top & Cover Mfg. Co., Inc.

Badger Brass Manufacturing Co., Baldwin Chain & Manufacturing Co., Barnes Gear Co., Belden Automobile Transmission Co., E. M. Benford, Bethlehem Steel Co., C. Billy, S. & M., Inc., Sidney B. Bowman Automobile Co., S. F. Bowser & Co., Brennan Manufacturing Co., Briscoe Manufacturing Co., Brown-Lipe Gear Co., Buffalo Electric Carriage Co., Buick Motor Co., Byrne, Kingston & Co.

Cadillac Motor Car Co., Cantano Electric Traction Co., Carpenter Steel Co., Albert Champion Co., The Chandler Co., Chicago Battery Co., Columbia Lubricants Co. of New York, Columbus Buggy Co., Consolidated Mfg. Co., Continental Caoutchouc Co., Continental Rubber Works, Cooper Hewitt Electric Co., Wm. Cramp & Sons Ship & Engine Building Co.

Dac Automobile Supply House, Dayton Electrical Manufacturing Co., Decauville Automobile Co., De Dietrich Importing Co., Diamond Chain Mfg. Co., Diamond Rubber

Co., R. E. Dietz Co., Wm. J. Duane & Co., Duff Manufacturing Co.

Eastern Carbon Works, Edmunds & Jones Mfg. Co., Electric Vehicle Co., Elmore Manufacturing Co., English & Merseck Co.

Horace E. Fine, Firestone Tire & Rubber Co., Fisk Rubber Co., H. H. Franklin Manufacturing Co., A. H. Funke.

Gabriel Horn Mfg. Co., Gallia Electric Carriage Co., Gas Engine & Whistle Co., Gilbert Mfg. Co., B. F. Goodrich Co., Good-year Tire & Rubber Co., Gray & Davis, G & J Tire Co.

C. T. Ham Mfg. Co., R. E. Hardy Co., A. W. Harris Oil Co., Hartford Rubber Works Co., Hartford Suspension Co., Hatch & Brittin, Inc., Haynes Automobile Co., Heinz Electric Co., Herz & Co., Hess-Bright Manufacturing Co., Hewitt Motor Co., Hollander & Tangeman, Holly Bros. Co., Henry Hooker & Co., *Horseless Age*, Hyatt Roller Bearing Co., Hydraulic Oil Storage & Distributing Co.

Imperial Brass Manufacturing Co., International A. & V. Tire Co., Iron Clad Mfg. Co.

Phineas Jones & Co., Jones Speedometer, Judson & Downing Co.

Knox Automobile Co.

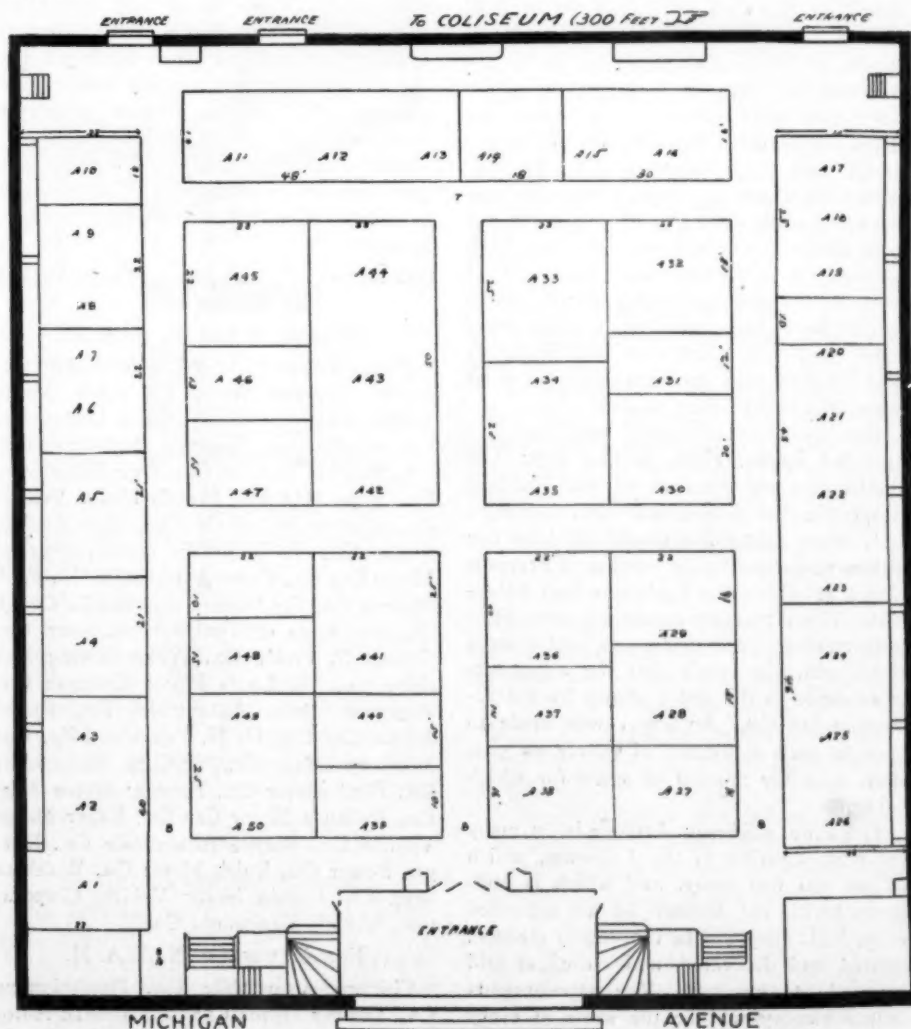
Lackawanna Leather Co., Light Manufacturing & Foundry Co., Locomobile Company of America, The Lunkenheimer Co.

McCord & Co., McGiehan Manufacturing Co., Manhattan Storage Co., Manufacturers' Foundry Co., Matheson Motor Car Co., H. & F. Mesinger Co., Meyrowitz Manufacturing Co., Michelin Tire American Agency, Inc., Michigan Steel Boat Co., Midgley Manufacturing Co., Midvale Steel Co., Charles E. Miller, Morgan & Wright, A. R. Mosler & Co., *Motor*, *Motor Age*, Motor Car Equipment Co., Motor Car Specialty Co., *Motor Way*, Motor World Publishing Co., Motsinger Device Manufacturing Co., L. J. Muttly Co.

National Battery Co., National Carbon Co., National Sales Corporation, New York Carriage Top Co., New York Sporting Goods Co., New York & New Jersey Lubricants Co., Noera Manufacturing Co., Northern Manufacturing Co.

F. W. Ofeldt & Sons, Olds Motor Works, Oliver Manufacturing Co.

Panhard Motor Car Co., The Pantasote Co., Parish & Bingham Co., Patterson, Gottfried & Hunter, Ltd., Peerless Motor



MICHIGAN AVENUE  
MAIN FLOOR PLAN OF FIRST REGIMENT ARMORY, CHICAGO, TO BE USED  
AS AN ANNEX TO THE COLISEUM SHOW.

Car Co., Pennsylvania Rubber Co., George N. Pierce Co., Pittsfield Spark Coil Co., Pope Manufacturing Co., Pope Motor Car Co., Post & Lester Co., Prest-O-Lite Co., Thomas Prosser & Son.

Railway Appliances Co., Remy Electric Co., Republic Rubber Co., Republic Rubber Tire & Shoe Co., Rose Manufacturing Co., Roth Jack & Tool Co., Royal Motor Car Co., Leon Rubay, Rushmore Dynamo Works.

Samson Leather Tire Co., Schwarz Wheel Co., Semi-Dry Battery Co., Shelby Steel Tube Co., Sibley & Pitman, Edward Smith & Co., Smith & Mabley, Inc., Smith & Mabley Manufacturing Co., M. Soffan (Hercules Tire), Spicer Universal Joint Manufacturing Co., C. F. Splittorf, Sprague Umbrella Co., Springfield Auto Top & Upholstering Co., Springfield Metal Body Co., Standard Roller Bearing Co., Standard

Welding Co., F. B. Stearns Co., Steel Ball Co., J. Stevens Arms & Tool Co., Studebaker Automobile Co., Swinehart Clincher Tire & Rubber Co.

E. R. Thomas Motor Co., Timken Roller Bearing Axle Co., Trade Advertising & Publishing Co., Twentieth Century Manufacturing Co.

The Utility Co.

Vacuum Oil Co., Valentine & Co., Veeder Manufacturing Co., Vehicle Equipment Co., The Ventilated Cushion Co.

Walter Automobile Co., Waltham Manufacturing Co., Warner Gear Co., Warner Instrument Co., Way Muffler Co., The Webb Co., Weed Chain Tire Grip Co., F. H. Wheeler, Wheeler Manufacturing Co., Whitlock Coil Pipe Co., The Whitney Manufacturing Co., E. J. Willis Co., Winton Motor Carriage Co., Witherbee Igniter Co., Wray Pump & Register Co.

Engine Co., Dayton Motor Vehicle Co., Model Gas Engine Co., Pierce Engine Co., Holsman Automobile Co.

#### EXHIBITORS OF COMPLETE VEHICLES IN THE ARMORY.

##### NON-MEMBERS OF N. A. A. M.

Welch Motor Car Co., Monarch Automobile Co., Lozier Motor Co., Acme Motor Co., Adams Co., Blomstrom Motor Works, Wolverine Automobile Co., Reo Motor Car Co., Maxwell-Briscoe Co., Buffalo Electric Carriage Co., Marion Motor Car Co., Rapid Motor Vehicle Co., Moline Automobile Co., Dolson & Sons Co., C. P. Kimball & Co., Cleveland Automobile Co., Oscar Lear Automobile Co., Synnestvedt Machine Co., Wayne Works, Rainier Bros., Western Automobile Co., Berkshire Automobile Co., Logan Construction Co., Detroit Automobile Co., Kansas City Automobile Co., J. W. Moon Buggy Co., Buckeye Automobile Co., Knight & Kilbourne, McCrea Truck Co.

##### IMPORTERS AND DEALERS.

Smith & Mabley, Inc., Panhard & Levasor (Ralph Temple), H. S. Michaels Co., Automobile Importing Co.

## Chicago Show Will Fill Coliseum and Armory.

CHICAGO, Nov. 25.—As foretold in these columns in the issue of November 16, it has become necessary to secure the First Regiment Armory, on Michigan avenue and Sixteenth street, as an annex to the Coliseum show to be held February 3 to 10 next. Allotments of spaces in both buildings were made this week and diagrams and notification of the allotments were mailed to applicants for space. Even with the addition of the armory, with its 20,000 square feet of floor space, there are an even dozen concerns on the waiting list. Had the armory not been secured, it would not only have been necessary to leave out a score of exhibitors who are now accommodated, but the others would have had such small spaces and some been forced into such poor locations that it would have been impossible to show more than half of their models.

The allotment of spaces was made, as provided by the rules, in this way: The applications of members of the National Association of Automobile Manufacturers, Inc., were selected and divided into five classes according to the number of previous shows at which the applicants had exhibited. The remaining applicants were similarly treated. A drawing was held in each class, with the result that the allotments were made in the order shown by the accompanying list. An effort was made to provide each applicant, as nearly as possible, with the amount of space for which he applied.

The First Regiment Armory is, in many respects, superior to the Coliseum, which is but 300 feet away, and which is connected with the armory by an asphalted alley. This alley will be thoroughly cleaned, lighted and decorated, and an effort will be made to cover it. The appointments at the armory will be the same in every detail as those at the Coliseum. A duplicate set of tickets will be issued so that

the public will be admitted to both buildings for one admission fee.

Agents' passes, good for both buildings, will be issued at the armory only, railroad tickets will be signed there, and all conventions which are to be held during the week will be held in that building. Demonstrating cars will line up on Michigan avenue, so that in this respect armory exhibitors will have a distinct advantage over those at the Coliseum.

Following is the list of exhibitors of complete vehicles in the order of allotment in both the Coliseum and the First Regiment Armory:

#### EXHIBITORS OF COMPLETE VEHICLES IN THE COLISEUM.

##### MEMBERS OF THE N. A. A. M.

Packard Motor Car Co., Elmore Mfg. Co., E. R. Thomas Motor Co., Olds Motor Works, Hayne; Automobile Co., Locomobile Co. of America, National Motor Vehicle Co., Electric Vehicle Co., Pope Motor Car Co., Pope Mfg. Co., Woods Motor Vehicle Co., Winton Motor Carriage Co., Mitchell Motor Co., T. B. Jeffery & Co., Peerless Motor Car Co., Knox Automobile Co., F. B. Stearns Co., Studebaker Automobile Co., J. Stevens Arms & Tool Co., Autocar Co., George N. Pierce Co., White Sewing Machine Co., St. Louis Motor Carriage Co., Apperson Bros. Automobile Co., Royal Motor Car Co., H. H. Franklin Mfg. Co., Northern Mfg. Co., Cadillac Automobile Co., Ford Motor Co., Premier Motor Mfg. Co., Reliance Motor Car Co., Baker Motor Vehicle Co., Wayne Automobile Co., Duray Power Co., Buick Motor Co., Waltham Mfg. Co., Corbin Motor Vehicle Corporation, Vehicle Equipment Co.

##### NON-MEMBERS OF N. A. A. M.

Chicago Automobile Co., Bartholomew Co., Tinch Motor Car Co., Auburn Automobile Co., Jackson Automobile Co., Austin Automobile Co., Pungs-Finch Auto. & Gas

## CLEVELAND SHOW SITUATION

### Interesting Deadlock Over Option on Only Large Exhibition Hall.

CLEVELAND, Nov. 27.—An interesting situation has arisen in connection with the plans for a local auto show here this winter. It comes about in this way:

The show last winter was conducted by the Cleveland Automobile Dealers' Association under the auspices of the Cleveland Automobile Club. Invitations to exhibit were sent to all dealers in the city, it is claimed, whether they were members of the C. A. D. Association or not, but one of the large dealers—T. C. Whitcomb, who handles unlicensed cars exclusively—claims that he did not receive an invitation. Instead of having a booth in the show, he rented a large hall near the Cleveland Grays' Armory, where the show was held, and arranged an exhibition of his own.

Mr. Whitcomb early decided to look out for himself this coming winter and to enlist the co-operation of all the other local dealers who were not in the association, so he obtained an option on the large Central Armory "for the same week that the Cleveland Automobile Dealers' Association is to hold its show." The matter was kept a secret, however.

A few weeks ago the association dealers found that the Grays' Armory would not be available for their show this year, and they applied to the parties in charge of Central Armory for the use of that place for the week of February 18. Meantime there had been a change of management of Central Armory, and, knowing nothing of Whitcomb's option, the new parties readily granted the use of the building for the week mentioned.



After the association had its plans well under way Whitcomb produced his option, and as there appeared to be no doubt that it was perfectly good and legal, the officers of the association immediately commenced overtures to induce Whitcomb to give up his claim, asking Whitcomb to join their ranks, with the usual payment for stock in the association.

Whitcomb maintains that his option is worth more than several shares of stock, and he declines to pay a cent. He has offered to join their show, providing they will give him first choice of space and give him a share in the profits in return for his option. Otherwise he claims he will give an "independent" show on the dates selected by the association. He claims that a number of the independent manufacturers have agreed to join him in the matter, and he believes he can get all the dealers outside the association to participate, making a creditable exhibition.

Central Armory is the only large hall available, and the week mentioned is the week which has been assigned to Cleveland in the big circuit of local shows.

#### BUFFALO SHOW IN MARCH.

BUFFALO, Nov. 25.—It has been definitely decided that Buffalo will have an automobile show during the week of March 13, and Convention Hall, the largest building for enterprises of this character in the city limits will be used for the purpose, as it was last winter. It is expected that the display of automobiles next year will exceed by far any previous display in Buffalo.

Plans for the show were discussed at length at a recent meeting of the Buffalo Automobile Trade Dealers' Association. The plans for an automobile show in the early spring were fully discussed.

The announcement that there will be a local show next year has been received with satisfaction by the automobilists of Buffalo, who have generously patronized previous events. The tradesmen have admitted that the shows have been profitable so far as Buffalo was concerned, but that shows were getting too numerous, and the expense of exhibiting at so many was very heavy. It was the consensus of opinion at the close of last year's local show that Buffalo would see no more auto exhibitions, the general belief being that but two shows would be held, both of national importance, one in New York City and the other in Chicago. But manufacturers have evidently changed their opinions. As for local dealers, they have entered into the spirit of the affair with unprecedented enthusiasm, so that the success of the affair is not a matter of doubt.

John D. Rockefeller has become an enthusiastic automobilist. But wait and see if he isn't only trying to prove the superiority of the gasoline machine over the electric car. —*Journal*, Hartley, Ia.

## Patents

### Ignition Device.

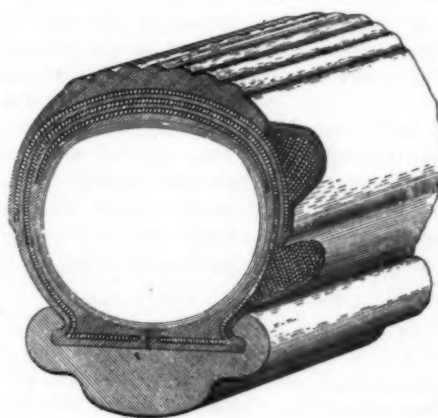
No. 801,823.—E. J. Berg, of Schenectady, N. Y.

In combination gasoline-electric vehicles, an arrangement for obtaining ignition current from the main dynamo. It consists in a supplementary brush close to one of the regular brushes on the commutator, so that it gets the potential of one or two coils only of the armature.

### Puncture-proof Tire.

No. 803,659.—A. S. Allen, of Brookline, Mass.

A pneumatic tire rendered puncture proof by vulcanizing into the tread one or more layers of wire coils, connected to form a



ALLEN PUNCTURE-PROOF TIRE.

sort of fabric by longitudinal wires run through the coils, as shown in the detail sketches.

### Carbureter.

No. 801,539.—J. S. Moreland, of Rochester, N. Y.

A carbureter for kerosene or other heavy hydrocarbons. A "double opposed" motor is shown, and the compression in the crank case is utilized to store air under pressure to spray the fuel.

### Speed Indicator and Recorder.

No. 798,923.—E. W. Rollins, of Roslindale, Mass.

A clock, combined with mechanism actuated by the vehicle's motion, which brings into view, through an aperture in the clock dial, figures successively indicating fractions of a mile, and at the same time per-

forates a roll of paper, moved by the clock, at intervals indicating fractions of a mile covered. The paper is uniformly graduated to indicate elapsed time.

### Variable Speed Gearing.

No. 803,701.—L. Megy, of Paris, France.

A complicated mechanism comprising an individual clutch system and devices intended to operate the clutches semi-automatically to suit the road resistance.

### Crankshaft and Flywheel.

No. 800,497.—S. W. Shaw, of Galesburg, Kan.

A construction suitable for small, single-cylinder motor with enclosed flywheels. The crankshaft is formed in one piece, instead of built up as usual, and the cranks are discs to which the separately-cast, heavy flywheel rims are bolted.

### Valve Mechanism.

No. 802,125.—E. R. Uhlin, of McDonald, Pa.

A single valve, having the form of a piston valve with a mushroom head at one end so that it acts also as a poppet valve, combines the functions of inlet and exhaust valve.

### Signal Horn.

No. 802,386.—C. H. Foster, of Cleveland, O.

A horn, either single or siren, arranged to be blown at will by the exhaust. Its construction is such that variations in the exhaust pressure do not alter the note of the horn.

### Folding Foot Rest.

No. 802,995.—H. A. Knox, of Springfield, Mass.

The folding foot rest of the Knox runabout, used in connection with the supplementary front seat of that vehicle. When not in use it folds up and partly covers the seat.

### Throttle Control.

No. 803,289.—T. B. Jeffery, of Kenosha, Wis.

The tilting wheel, pivoted beneath the steering wheel, by which the throttle of the Rambler cars is controlled.

### Washing Device.

No. 797,358.—H. B. Howell, of Rochester, N. Y.

A fountain nozzle for a carriage-washing hose, on which are mounted hooks arranged to hold a sponge, so that the stream from the hose will clean the sponge.

The physician who tells us to take an automobile for indigestion does not explain how we are to elude the owner. An automobile is rather an inconvenient thing to conceal.—*Republican*, Shelbyville, O.



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**Cash Prize  
vs.  
Trophies.**

The question of cash prizes vs. trophies for drivers of winning racing cars has been raised in connection with the Florida beach meeting and decided in favor of a continuance of the award of trophies. It is a serious question and one on which there is much to be said on both sides. Mr. WALTER CHRISTIE, the constructor of the car bearing his name, has advocated the system of cash prizes, and points to the large winnings of drivers in the great foreign competitions as an aid to the development of great drivers abroad.

In sport it is generally assumed that participation in a race for a cash prize is an acknowledgment of professionalism. The application of this fundamental rule to automobile contests is responsible for a large measure of the opposition to the cash-prize system on the part of those who desire to maintain the amateur status of automobile racing. Automobile racing, however, is really not a pure amateur sport, and never can be. To be sure, club races or contests can be held under the strictest interpretation of the rules of amateur sport, but great national or international meetings cannot possibly be so managed. Few amateurs can afford to own machines capable of winning the classic events. There are sportsmen here like VANDERBILT and BOWDEN, and abroad like HEATH and LANCIA, who can afford the time and money necessary to maintain a strictly amateur status, but they

form the minority among the racing men. Manufacturers directly represented by their own experts form the bulk of the participants and make the big meetings possible. The conduct of the big races, however, is not entirely professional. There is no charge for admission, for example, and the races are not held for the gate receipts. The appearance of amateurism is kept up also by the award of trophies instead of cash prizes. There is thus no incentive to anyone to make a living out of automobile racing. Were cash prizes offered, no doubt a class of drivers would come into existence which would include men owning special machines, built for the sole and only purpose of picking up purses. Jockeying and foul play of all sorts which seem inseparable from cash contests would follow, and the entire sport would be likely to fall into disrepute.

There now seems to be nothing that would prevent American drivers from earning large sums of money on the side by winning races just as the foreign drivers, except that American manufacturers do not offer such inducements. The winner of a great foreign race wins cash prizes offered by the builders of the car, by the tire makers, and by other commercially interested parties. This would be quite possible here, and without derangement of the present system of confining the official prizes to trophies of one sort or other.

**Efforts to  
Secure an  
Even Torque.**

Perhaps the highest aim of the designer of automobiles is to produce a motor whose constancy of torque and consequent flexibility and usefulness at low speeds will render unnecessary the use of the usual change-speed gear, at least under ordinary conditions. For a long time the difficulty of building reliable explosion motors made multiplicity of cylinders synonymous with multiplicity of troubles, and it is only within a comparatively short time that a motor having more than four cylinders has been considered practicable for touring cars. A number of devices have been designed to make up for the lack of flexibility of the motor and its inefficiency at very low speeds, and permit a greater number of gradations of car speed than can be obtained with the sliding gear, with its maximum of four or five changes; but the clash gear has kept in favor, notwithstanding all efforts to supplant it. The great strides made in motor construction, however, have made it practicable to increase the number of cylinders, and there are now a number of cars built with six-cylinder motors, giving excellent results, and at least one with eight cylinders; in the latter the change-speed gear is not used and is only represented by a low gear for use in case of emergency. Recent tests of six-cylinder cars abroad have shown their ability to make long runs over roads of all kinds without resorting to low gears, even

when very stiff grades had to be surmounted.

While both American and foreign builders are obtaining satisfactory results by increasing the number of cylinders, there is yet another method of securing more power impulses per revolution which seems to have been left to American builders to develop; namely, by using the two-cycle motor. The fact that the two-cycle motor has double the torque constancy of the four-cycle engine of the same number of cylinders, to say nothing of its simplicity, has naturally attracted the serious attention of designers, and the defects of this type of motor have been greatly reduced; in fact, manufacturers claim that the most serious faults have been practically eliminated. There is no doubt that the two-cycle motor has been greatly improved in the hands of automobile builders, and it seems reasonable to believe that there is a future for this peculiarly American development of the explosion motor for automobiles.

**Specialization  
in Auto-  
mobile Types.**

Evidence of the reliability of the modern gasoline automobile is displayed convincingly in the greater attention which is nowadays being paid to the coach work of the complete vehicle. Up to a comparatively short time ago this was rather a secondary consideration with the builder. He was confronted with the serious problem of constructing a mechanism that would carry passengers about the streets and roads with certainty. Questions of comfort and convenience were subordinated to the much more important one of reliability or continuity of operation of the machinery. There was very little use in building an elaborate body were the machinery not equal to the task of moving that body about when and where the owner pleased.

After the initial experiences with the shaftless carriage, which was nothing more or less than a horse-drawn body construction with a motor and transmission hitched on, came a period of more highly specialized design in which the machinery was carried on a self-contained chassis, and the body was merely an attachment reduced to the simplest possible construction—the familiar open tonneau car.

Meanwhile the electric automobile had been developing along lines for city traffic, following in general construction the models of the more elegant horse-drawn vehicles, until it has occupied a field peculiarly its own, and in which it is, and probably ever will be unrivaled.

Familiarity with the use of the gasoline touring car has convinced users, and therefore manufacturers, that the construction can be adapted to other special uses with quite as satisfactory results as are obtained with the conventional touring car. In the one direction, this has led to the introduction of highly efficient commercial vehicles of the lighter types, and in the other to elaborate and beautiful productions of the



coach builders' art for strictly pleasure use.

Reports from abroad of new models tell of an increasing number of carriages in which the machinery equipment is hidden in the body. The idea is not at all new, for it has been advocated by various builders, and many models of the carriage type have been always on the market; it is the general tendency, however, that is new. Apparently the time for specialization has arrived, and it will not be long before the man of wealth will have in his garage automobiles of as many types and styles as he formerly had carriages in his coach house. At first glance it seems like retrogression, while in reality it is in the line of progress, and gives a broad hint of the tremendous possibilities of the business and the gradual development of the automobile from an addition to the transportation facilities of the individual or family to the sole means of reliance for getting about independently of public means of transportation.

#### FATAL AUTO ACCIDENT.

As the result of the overturning of an automobile on Thompson avenue, Long Island City, last Saturday, Mrs. Francis Burton Harrison, of New York, who was riding in it with a party of invited friends, was almost instantly killed, and the other occupants of the car—Mr. and Mrs. Laurence I. Scott, of San Francisco, Charles T. Crocker, Mrs. Harrison's brother, and Constant Ravert, the chauffeur—were more or less injured.

According to reports, the car, a 40-horsepower Richard Brasier, owned by Mr. and Mrs. Harrison, was running at high speed, between thirty and forty miles an hour, when it swerved into the soft sand at the side of the road. At this point the chauffeur appears to have lost his head, for the car was allowed to run more than 150 feet when it struck a telegraph pole with speed practically unchecked, according to the statements of eye-witnesses, and upset. With brakes in good order the car could have been easily stopped before reaching the pole if the chauffeur had acted with promptness. E. B. Gallaher, the New York agent for the Richard Brasier car, stated that personal investigation proved the brakes and steering gear to be in perfect condition after the accident, but that one front tire had burst, corroborating the chauffeur's statement that the bursting of a tire caused the car to swerve. The police, on the other hand, state that the accident was caused by a derangement of the steering gear.

A Nutmeg state legislator thinks that the question of what to do with the emancipated and idly multiplying horses is to become, in the near future, as great a question as the negro problem. He does not suggest that the state should try to educate them and let them vote, but puts the solution of the matter up to the automobilists. —Exchange.

## Motor Boat Club of America to the Fore.

Standing committees were appointed by the Motor Boat Club of America at the first meeting last week of the executive board of the recently organized club. To the committee on ways and means was assigned the duty of arranging for clubhouse facilities of the coming year. After making a quiet investigation of all available houses along the Hudson river bank, the officers have found one that is well adapted to the needs of the club that is located only a short distance above the clubhouse of the Columbia Yacht Club at the foot of Eighty-sixth street. All that remains, it is said, is to complete the preliminaries necessary to signing a lease. It is thought that the matter will be definitely settled inside of a month.

It was decided at the meeting to take an active part in the Paris auto boat conference in December, at which a program of international racing events is to be arranged. Secretary Morris, of the British Motor Yacht Club, has been selected to represent American interests at the conference, and he has been advised regarding a choice of dates for an international auto boat regatta on the Hudson next summer and given assurances of one or more American entries for the

British international motor boat cup race for 1906.

Commodore A. D. Proctor Smith, of the Motor Boat Club of America, announced appointments as follows:

Fleet surgeon, Dr. Seymour Oppenheimer; fleet captain, Joseph S. Bunting; measurer, Francis W. Belknap.

Regatta Committee.—Charles P. Tower, chairman; Charles D. Mower and E. A. Stevens, Jr.

The other committees were filled as follows:

Ways and Means.—A. D. Proctor Smith, chairman; Frederick Sterry, George Gillig, H. S. Gambel, Charles Francis, George J. Vestner and William B. Hayden.

Entertainment.—Hugh S. Gambel, chairman; Charles M. Riedell, W. H. Williams, Jr., A. De Magnin and Louis Annin Ames.

House.—Alexander S. Williams, chairman; H. H. Beehse, Andre Massenot, C. R. Mabley and C. M. Hamilton.

Library.—John D. Roach, chairman; H. L. Aldrich, Dr. Louis Neumann, Frederick M. Crossett and Everett M. Hawley.

Membership.—C. Allen Hayden, chairman; C. E. Francis and J. A. H. Dressel.

#### AMERICANS AT PARIS CONGRESS.

J. Howard Johnson and William F. Hogan have been appointed delegates from the Automobile Club of America to the international automobile conference to be held in Paris from December 11 to 16, during the Paris show. Both are members of the club and have lived in the French capital for some time. No instructions have been forwarded to them by the club as to their action in the conference.

At this congress the whole subject of international racing is to be threshed out, and the fate of the Gordon Bennett and Vanderbilt cup races will be definitely settled. It is generally thought that the Automobile Club of France will tender the Vanderbilt cup to the A. C. of America, as the French club announced before the last race on Long Island that it would not again compete for the trophy.

What will become of the more classic international cup is even more in doubt, as the French club has practically committed itself to the decision to conduct only one big contest annually—the Grand Prix—and to forego competition for the Gordon Bennett cup.

#### MOTOR CLUB PRIZES AWARDED.

Trophies won in the recent economy contest of the New York Motor Club were presented at a meeting held at the Hotel Cumberland, New York, on Friday evening, November 24, and an enjoyable evening was spent in singing, smoking and general jollification. The W. J. P. Moore trophy, offered for the car making the most economical run per passenger, including tire charges, was

presented to R. M. Owen, whose ten-passenger Reo wagonette won the trophy. The McMurtry medal, for the car having the least ignition trouble, was won by the Reo runabout, which had no ignition trouble. Mr. Owen was presented with the medal. The National trophy, for the car making the most economical run per passenger, not including tire troubles, was also won by the Reo 'bus, but owing to the fact that the trophy was not finished, the presentation was deferred. The Reo runabout also won the gold medal for the best showing made by cars costing less than \$1,500, and the Morgan trophy, for the car using the least gasoline per passenger, went to the Reo wagonette. The Burrell trophy, won by the Continental Tire Co. at the Long Branch contest last summer, was also presented.

#### POWER BOAT CLUB IN BUFFALO.

BUFFALO, Nov. 25.—An organization that has for its object the promotion of auto-boat racing in Buffalo next year has been perfected by about fifteen Buffalonians, who are greatly interested in this new sport. Officers of the Buffalo Motorboat Club have been elected as follows: J. G. R. Glasgow, commodore; N. L. Candell, vice-commodore; G. F. Elliott, rear-commodore; Jess B. Eccleston, secretary; F. W. Sherman, treasurer. The board of directors includes the officers named and C. A. Criqui, J. H. Mehrhof, H. A. Brundigo and N. S. Thomas.

It is the intention of the officers to select a suitable site along the Niagara River on the Buffalo side, if possible, or on Grand Island, and to start work at once

on a clubhouse, which, the members say, will be finished early in the spring.

As there are more than 200 power boats in this city at present, and the number is constantly growing, it is expected that some genuine sport will result among this class of water craft during the summer months.

### A Notable Auto Club.

The Long Island Automobile Club, of Brooklyn, N. Y., is an organization which has taken a notably active part in automobilism from the time it entered the field, which was in October, 1900, when four men met at the office of L. R. Adams to arrange for the formation of a club. To-day there are 275 members; the club has its own clubhouse and garage, and the membership is growing at a rate that threatens to tax the present accommodations beyond their capacity within a very short time. The clubhouse, shown in the accompanying engraving, really consists of two separate buildings joined by doors. The first, which may be seen on the right, was the original clubhouse, purchased in 1904; but it was almost immediately seen that this was too small, and the following winter, 1904-1905, the adjoining property was purchased and the new building, which conforms with the architectural style of the first but can be readily distinguished in the engraving, was erected. The entire two floors of the new addition are used for garage purposes; a large electric elevator is installed, and there is a large electrically lighted pit for repair work. The ground floor of the old house is still used for car storage, the upper floor being devoted to the club rooms, which include the large general room, grille room, ladies' room, governors' room and kitchen, where every evening the club chef is in attendance to serve light meals to members. An attractive feature of the main room is the huge red brick fireplace, which on winter evenings is surrounded by a group of contented, yarn-spinning club members. A complete new steam heating plant is at present being installed in the clubhouse.



A FEW MEMBERS OF THE L. I. A. C. IN FRONT OF NEW CLUB HOUSE ABOUT TO START FOR SUNDAY MORNING RUN.

During the summer club runs and tests of various kinds are held; while in the winter the club rooms are the scene of many social gatherings, lectures and other enjoyable and profitable affairs, including the annual club banquet and a number of ladies' evenings. The location of the club house, at 360 Cumberland street, Brooklyn, is most convenient, being within half a block of elevated railroad and trolley lines, and within easy walking distance of the Flatbush avenue station of the Long Island Railroad. Excellent roads lead in all directions, and the famous roads of Long Island can be reached without difficulty. Membership in the L. I. A. C. includes membership in the New York State Automobile Association and the American Automobile Association.

### NEWS NOTES OF THE CLUBS.

NEW YORK.—In its work of compiling route information, the American Motor League has issued a special circular, entitled, "How to Describe a Route," in which the best way of describing an automobile route is clearly set forth and illustrated by sample maps and diagrams. One of these circulars will be sent to any automobile user who feels an interest in the work and who will send his address by postal card to the secretary, at Vanderbilt Building, New York, N. Y.

CHICAGO.—The new club house committee of the Chicago Automobile Club has decided to give E. C. Wetten, a real estate dealer, the option of selecting the site for the proposed club house. Mr. Wetten has four sites in mind and will report upon his selection in a few weeks. All of the pieces of property under consideration are inside of the "loop" district. It is hoped to have the new house ready for the members by the first of May, at which time the lease of the present Michigan avenue house expires.

CLEVELAND.—The first number of the *Cleveland Automobile Club Bulletin* has made its appearance, dated November. It is the purpose to issue the *Bulletin* "every little while, probably once a month," de-

pending on how well it takes with the members. It is a six-page pamphlet containing news and announcements of particular interest to the club members. Among the announcements is one relating to a new road book that the club has in preparation. This is intended to show the main roads between the principal cities of Ohio, and members are requested to contribute descriptions of the different routes they traverse, so that a generous fund of reliable information may be collected.

NEW YORK.—The Long Island A. C. will resume its winter talks on different makes of car on Friday evening, December 1, at its clubhouse at 360 Cumberland street, Brooklyn. The 1906 models of the White steam and Lambert gasoline cars will be the subjects, and experts in each will be on hand with machines to explain all features of construction and operation.

CINCINNATI, O.—The Cincinnati Automobile Club, of which Val Duttonhofer is president, is preparing to fight what its members consider excessive toll charges on the highways, and will send a delegation to Columbus this winter to demand legislation.

BALTIMORE.—The A. C. of Maryland toured to Ellicott City, an historic old village on the banks of the Patapsco in Maryland, on Sunday, November 19, and after dining there the members returned home by a roundabout way. It is very probable that a party of club members will attend the race meet at Ormond next January.

NEW YORK.—The New York Motor Club is preparing to hold a show of racing trophies, posters and automobiling photographs during the week of the automobile shows, January 13 to 20. The exhibition will probably be held in the clubrooms at the Cumberland Hotel.

CAPE MAY, N. J.—Al Depew has been elected treasurer of the Automobile Club of Cape May.

WORCESTER, MASS.—The Worcester A. C. was incorporated recently with 125 charter members.

### PLANS SHOW IN BALTIMORE.

BALTIMORE, MD., Nov. 25.—While no definite arrangements have been made, it is announced that an automobile show will be held in this city some time during the early part of next year—probably in February. The Lyric, a large building formerly known as the Music Hall, is mentioned as the place of exhibition. Howard A. Gill is the prime mover in the enterprise.

Automobilists should exercise more care in their runs about the city. There is a tendency to turn short in going around corners. This has a likelihood to frighten horses, and may be the means of injuring people who are about to cross the street at the time. If the chauffeurs would plan to make a wider circle in turning the corners, there would be less chance for accident.—Fond du Lac (Wis.) *Bulletin*.



## French Tire Competition.

PARIS, Nov. 17.—The Committee of the Automobile Club of France, after many weeks of close studying, have at last issued the regulations governing the tire race which the club will hold next year. As has already been reported, this consists of a reversion of the ordinary principle of road racing, the competitors in this event being at liberty to change any part, or the whole, of the motor, but must not touch the tires.

The race is open only to constructors of tires or patent automobile wheels, and not more than four cars can be entered by any one firm, the entrance fee being \$600 per vehicle. Every engagement must be accompanied by a full description of the wheel or tire, and before being officially accepted must be approved by the sporting commission. Each constructor may choose the type of car which he considers most suitable for his wheels and the nature of the competition. The distance to be covered will be from 625 to 937 miles, and will be run off in either one or two stages. The minimum weight of chassis allowed is 2,200 pounds when empty, and maximum weight 2,750 pounds, with an allowance of 15 pounds for magneto. Two passengers must be carried side by side, their weight to be 132 pounds each, the deficiency, if any, to be made up by ballast. Behind the two seats must be fixed a locker 70 cm. wide, 70 cm. long and 50 cm. deep, to receive a charge of 880 pounds in bags of sand. This box will have a lid and will be closed and sealed during the race. By chassis is meant the motor and transmission gear, radiator, brakes, axles, springs, wheels and tires, water, gasoline and oil tanks, and a body work without cushions.

Competitors must carry the same kind of tires on all four wheels. Provision is made for two classes of tires: (1) Pneumatic tires having no other means of elasticity than the air under pressure between rim and outer envelope; (2) tires of every other kind, consisting of solid rubber, springs, or a combination of the two. In the first class the smooth outer cover, the anti-skid bands, the movable non-skid bands, as well as the tires to which they are attached, shall all be sealed before the race. Each car will also be allowed four spare inner tubes, which will also be stamped, and can be changed at will, but it is absolutely forbidden to use any other than these. Repairs to tires may be effected during the contest, but they must be carried out by the two men on the car and with the ordinary equipment allowed.

The regulations for class No. 2 are rather more complicated. When making an entry the constructor must furnish a design of the wheel or tire, a complete wheel or complete tire, the part or parts which he desires to change during the contest, the number of times he expects to be obliged to change, and a complete description of the manner in which changes are made, as well as the

approximate time necessary to make such change. The sporting commission will decide each case separately, and will give a reply to the competitors within fourteen days of the receipt of engagement. Should the competitor not be satisfied with the conditions imposed he may withdraw from the race and will be refunded 50 per cent. of the amount of his entrance fee, provided that the demand is made within eight days. Repairs must be carried out under the same conditions as for ordinary tires; that is, by the men and with the tools carried on the car. If the race is run in two stages all the cars finishing the first part will be guarded in a closed garage until the commencement of the second race. No gasoline, water, or oil may be put on board until after the second start has been given, and the time occupied in doing this will be counted in the race. The winning car will be the one that has covered the total distance in the shortest time, and which shall at the finish be equal to its weight at the start, and be provided with all its officially stamped wheels, tires and other parts. A team classification will also be made, in which regularity of running will be the basis.

## PENNSYLVANIA ROAD LAW.

### Expected that Legislature Will Amend the Act Appropriating \$6,000,000.

PHILADELPHIA, Nov. 25.—Although the call for an extra session of the Pennsylvania Legislature issued recently by Governor Pennypacker failed to mention the good roads issue, there is no doubt that at the regular session a determined effort will be made to so amend the present law, passed at the last session, as to make it acceptable to the counties and townships. Up to the present time but a comparatively small portion of the money available—upwards of \$6,000,000 was appropriated, to be expended within five years—has been called for by the counties and townships, because of various objectionable features of the law. In many quarters it is asserted that the law was purposely passed in its present shape in the belief that but few calls would be made upon the fund.

With \$6,000,000, it is claimed, a very fair start can be made in providing good roads in the state, but at the present rate of expenditure that amount of money will last ten or fifteen years. With a reform legislature the good roads advocates believe they can frame a satisfactory law, but it will mean a wait of at least two years.

## GRANGERS WANT SEVERE PENALTIES

Worthy Master Aaron Jones, of the National Grange, Patrons of Husbandry, seemed to strike a popular chord when, at the annual convention of that body in Atlantic City recently, he spoke of the automobile and its relation to travel upon country roads. His remarks seemed to meet with the approval of a large propor-

tion of the delegates present when he said:

"There is no doubt of the right of motorists to legitimate use of the highways, but that use should be regulated by wise laws vigorously enforced and the penalties for their violation should be sufficiently severe to serve as an effectual warning against violations by others. The reputable motorists owe it to themselves to join with the people in this movement against the reckless. It would be well to have uniformity in such laws in the various states and a uniform policy for their vigorous enforcement."

The employment of convicts in building and repairing roads also came up for discussion during the convention.

## OBSTACLES TO AUTOING IN IOWA.

OTTUMWA, Ia., Nov. 25.—There is a great automobile movement in this city, but the bad roads and the farmers are serious obstacles. The farmers are said to be decidedly unfriendly. They won't help improve the roads, and they don't want to divide the use of them with automobilists. When an automobile agent was asked regarding the future of the automobile in his town, he said that he would much prefer a flying machine—that would be the only contrivance that may be used in Wapello county.

Despite the fact that the roads and the soil tillers are against them, the auto people are forging ahead. There are more than twenty-five machines in the city. The Olds company has an agency here which has sold ten of its machines. There is said to be but one road on which automobilism is anyway satisfactory. Most of the driving is done on the brick-paved streets.

## VERDICT FOR \$5,000 DAMAGES.

A verdict for \$5,000 in favor of the plaintiff was rendered in Cumberland, Md., on November 11, after a jury trial, in a damage suit brought to recover for the death of John Cashman, who was run down in Hagerstown by an automobile driven by John Roulette. The action was brought by the widow, Catherine Cashman.

Plaintiff charged that the defendant ran over the deceased while driving his automobile in a fast and negligent manner. The defendant, Roulette, who is a young man in partnership with his father in a knitting mill in Hagerstown, alleged that Cashman ran out of a saloon door directly in front of his machine, and that the defendant was powerless to prevent the accident. About forty witnesses were called in the trial, which lasted for two days. The verdict of the jury was in favor of the plaintiff, and the judge fixed the amount of damages.

C. E. Bishop bought the six horses of R. B. Vermilyea last week, and we guess that it will be an automobile that Mr. Vermilyea will purchase next. Mr. Vermilyea has been contemplating getting one for some time, and from all appearances it will be on hand in a few days.—Unionville (Ia.) Chronicle.

## NEWARK'S HORN INDUSTRY.

### From 60 to 70 Per Cent. of Domestic Horns in Use Made in Jersey.

NEWARK, N. J., Nov. 27.—Somewhere between 60 and 70 per cent. of the automobile horns of domestic manufacture that are in use in this country are made in this city, according to a report made by the local board of trade. One Newark factory alone produces from 65,000 to 75,000 auto horns annually, of various sizes, shapes and prices. This plant is working overtime to keep up with its orders.

The growth of the business has been wonderful. Not very long ago this concern was making only one style of horn, with a rubber bulb attachment for forcing the wind past the reed that creates the sound. It was so small that it was scarcely more than a toy. At that time there were only a few American horns on the market, the demand being for French and German horns. Concluding that horns could be manufactured as well here as abroad, this concern made special tools and began bending its energies towards the production of a first-class horn that would be the equal in appearance and durability of any turned out in factories across the Atlantic. At first there was only a slight increase in the demand for any of the six varieties of automobile horns made, but gradually the sales grew in number and quantity until now the concern is making thirty different kinds of horns which retail for from 50 cents to \$15 each, and these are being shipped to every section of the country where automobiles are used.

Among the thirty different varieties made are little horns and big ones, horns that emit a shrill, piping sound; some that wail and cry like a soul in torment, and some that resemble a deep fog horn when blown. There are horns with a single twist, and others that show several turns and three or four feet of flexible brass tubing. Some are made to fasten to the steering wheel near the hand of the driver, while others have tubing attached to the horn and leading from any part of the car where the horn may be attached to a point near the hand of the driver where the bulb is secured.

### NEW CLEVELAND SALESROOM.

CLEVELAND, Nov. 27.—The Paxson Motor Company, recently incorporated, has opened a fine establishment in the Pythian Temple Building, 317-319 Huron street, in the quarters formerly occupied by the Ohio Motor Car Company. It has two large storerooms and a large basement. The latter is accessible by an incline leading from Erie street, a most convenient method of entrance, which eliminates the undesirable scheme of having cars run through the salesroom from the front. A repair shop is being fitted up in the basement and the company will have a good line of supplies. The company is headed by C. D. Paxson, president and general manager, with Robert Drach, secretary-treasurer, and Lewis

Schmidt, shop superintendent. The Jackson and Wayne lines will be handled and samples of a number of new models are being shown. A special effort is being made to introduce a new delivery wagon, the chassis for which is furnished by the Wayne company and the body built in this city to suit the requirements of purchasers. These wagons have 5- by 5 1-2-inch, 20-horsepower horizontal opposed engines, pressed steel frames, planetary change gears, double band brakes on hubs and light wood top.

### NEW SARATOGA SPRINGS GARAGE.

SARATOGA SPRINGS, Nov. 27.—Architects' plans are being prepared for a fine new garage to be erected by J. A. P. Ketchum on a plot of ground adjoining Convention Hall, on Broadway, which he bought a few days ago. Work on the construction of the building is to begin as soon as the plans are finished, and the structure is to be ready for occupancy by spring.

The garage is to be 100 by 150 feet in size, but it has not yet been decided whether it shall be one or two stories high. It is to be of fireproof construction, floored with cement, and to have an entire front of plate glass. It is proposed to make it ornamental and to equip it with all modern facilities. The total cost is estimated at \$25,000.

### CLEVELAND SECOND-HAND MART.

Brock's Garage is the title of an establishment which will be an important factor in the sale of second-hand cars in Cleveland the coming season. Charles Brockway, who formerly handled second-hand cars in Chicago, is at the head of the company, which occupies a large store at the corner of Bolivar and Erie streets, in the heart of the automobile district. The company handles second-hand machines exclusively, either buying them outright or selling them on a commission basis. At present it has more than fifty cars in stock, and has arranged for another store in the same block, which will give it large additional space for the many machines which are constantly coming in.

Mr. Brockway has bought out the Reliable Automobile Company, which did repair work exclusively, in a large and well-equipped establishment on Bolivar street, a short distance from the Brock establishment. The two establishments will be conducted separately, but the arrangement will enable the second-hand concern to save considerable on repair work and the rebuilding of cars.

### DRIVES BY FIFTH WHEEL.

A new company, known as the Oliver Trackless Car Company, was recently organized in South Bend, Ind., for the purpose of manufacturing pleasure automobiles and traction cars powered with either gasoline or steam engines and driving through a single traction drum called a "fifth wheel." The inventor and promoter is Frederick William Oliver, who has taken

up his residence in that city. The vice-president and general sales agent is A. J. Diermeyer, of the firm of Miller & Diermeyer, makers of agricultural implements and machinery. In an interview Mr. Diermeyer said:

"The work of manufacture is being carried on at present in South Bend and Chicago, the castings being made by different foundries and the complete machines assembled here. They are propelled by a drum-like fifth wheel, arranged under the center of the vehicle to run in bearings on two hinged arms, which project downward at a slight inclination, and are drawn forward by tension springs, which tend to hold the wheel against the ground and increase its traction. The tension is under the control of the operator when the machine is traversing a bad road. The drive wheel is made hollow and is used as a muffler."

The small machines will be similar in appearance to an ordinary pleasure automobile except for the central drive wheel. The larger ones are intended, however, to be used in hauling loaded farm wagons from field to barn and from barn to market.

The promoters have aroused much interest in their enterprise by the novelty of their proposal to adapt the new machines to farm work and also by the announced intention to operate an automobile omnibus line between South Bend and Plymouth, Ind., taking in Lakeville, Lapaz and other towns on the old State Road, and another line to St. Joseph, Mich., passing through Buchanan, Glendora, Baroda, Vineland, and other intermediate points in Michigan's fruit country.

### GASOLINE PERMIT REQUIRED.

The court of appeals of the District of Columbia, at Washington recently, rendered a decision affirming the judgment of the police court in the case of the Cahill Automobile Co. against the District of Columbia. The question at issue was the validity of the police regulation governing the storage and sale of gasoline without a permit. The Cahill company operates a garage on L street, where it stored gasoline in an underground tank without securing a permit. With a view to making a test case Mr. Cahill submitted to an arrest. He was convicted and fined in the police court, whereupon an appeal was taken to the higher court, the case being argued at length by W. C. Duvall, president of the Automobile Club of Washington. The court held, however, that the regulation was valid, and that the proof was sufficient to sustain the conviction.

An American speeding over the Continent of Europe in his automobile asked of his chauffeur: "Where are we?"

"In Paris," shouted the man at the wheel, and the dust flew.

"Oh, never mind the details," irritably screamed the American millionaire; "I mean what continent."—*Exchange*.



## News and Trade Miscellany.

Automobile drivers of Detroit, Mich., have organized with twenty-four charter members a society to be known as the Detroit Chauffeurs' Association. The object of the association is social and instructive, applicants to membership having to pass a rigid examination. The society will open club rooms as soon as a suitable place is found.

An enjoyable automobile tour was one recently made by Mr. and Mrs. John Woodward, who left their home in Dayton, Ohio, early in May and journeyed by easy stages across Ohio, New York and Massachusetts, through New Hampshire and Maine to Weld, a small town in the heart of Franklin county. Here the tourists spent the summer, returning in September to Boston via the White Mountains, and then traveling south to Birmingham, Ala., where they will reside this winter.

The Reliability Race recently run between Melbourne and Sydney, Australia, was won by a Mercedes car fitted with Continental tires.

The Wayne Automobile Company, of Detroit, Mich., has closed the following agencies: A. T. Wilson, Denver, Col.; Paxson Motor Company, Cleveland, O.; Greenville Motor Company, Greenville, S. C.

Considerable activity in the way of improvements about the plant of the H. H. Franklin Manufacturing Company is noted. A considerable strip of property north of the main building, facing on West Marcellus street, has been obtained. The old buildings have been removed, the ground graded, and the property is now being enclosed by a high board fence. This will furnish additional yard facilities.

The Central Automobile Company, of Cleveland, has been acquired by Alvin H. Smith and A. B. Wiel, T. T. Long, who has been at the head of the company, having retired. The company has a large garage and salesroom at 32 to 38 Vincent street and handles the Studebaker gasoline and electric cars. Some of the gasoline models are being built in Cleveland at the old plant of the General Automobile Company. This year they will have two styles of Studebaker gasoline cars and three electric models.

Gardner, one of the larger towns of Worcester County, Mass., is to have one of the best equipped automobile stations in this vicinity, construction work to be begun at once. Levi H. Greenwood will build the new station, which is to be run in conjunction with the Windsor House, a favorite stopping place for automobilists visiting Gardner. A Worcester firm, Scovil & Wheeler, have the contract for the work.

Work will probably be commenced this winter on the construction of a magnificent automobile road and pleasure driveway between Cornwall-on-the-Hudson and West Point, to take the place of the present road which winds over Cro' Nest Mountain, and which is too steep for safe pleasure driving. This is the highway which has often been compared with the famous road along Lake Lucerne in Switzerland, and from which is viewed some of the most beautiful scenery in New York state.

T. C. Whitcomb, a large, "independent" dealer in Cleveland, has moved into a new store at 400 Erie street, which has been handsomely fitted up with a large salesroom in front. Mr. Whitcomb is building an addition 50 by 50 feet, which will be used as a repair shop. This year he will handle the Premier, Rambler and Maxwell lines. He has six samples of the new Rambler line. He says that many persons are already look-

ing for 1906 cars, and the ability to show a sample and guarantee the delivery of the machine whenever it is wanted is a great lever in closing up a deal at once.

R. H. Magoon, who has a fine new establishment at 410 Erie street, Cleveland, has taken on the Locomobile line, which he will handle in addition to the Pope-Toledo, with which he had great success during the last two years.

Apropos of the expenditure of fifty million dollars by the state of New York for the betterment of public highways, it is the intention of the State Engineers to so lay out the roads through each county as to form a continuous highway from one end of the state to the other, sixty-one miles of the entire distance having already been completed.

The idea of a test track on which machines may be tried at their full speed capacity, without danger to the public, is gaining ground rapidly. The Moline Automobile Company, of East Moline, Ill., is building a circular track a quarter of a mile long and twenty-two feet wide, on which its cars may be tried before being offered on the market. Windsor T. White, of the White Company, is quoted as saying that he is ready to contribute his share to the construction of a track, ten or fifteen miles in length, to be controlled and supported by the various manufacturers. A short private track has long been in use by the Rambler concern in Kenosha, Wis.

In connection with the new Pennsylvania law that after January 1, 1906, each automobile must carry two license tags, contract has been awarded by the State Highway Department to the Ingram-Richardson Manufacturing Company, of Beaver Falls, to supply the tags, which are to be of blue enamel with white figures and having slits to insert straps.

Joseph Tracy, the well-known automobile expert and amateur driver, who won third place for an American car in the Vanderbilt race, sailed for Europe last Tuesday, to attend the Paris show. While abroad Mr. Tracy will extend his investigations to cover the British industry, and will execute various commissions with which he has been entrusted.

W. R. McKeen, Jr., superintendent of motive power and machinery of the Union Pacific, is responsible for the design and construction of the new self-propelled railroad coaches built at the Omaha railroad shops, and which have been very successful in operation. The work of these coaches is attracting the attention of traffic managers throughout the country.

Con Baker, Philadelphia agent for Smith & Mabley, is making his headquarters at the Bellevue-Stratford garage.

Coincident with the reappearance of winter has come a demand for closed cars. Recent purchasers of limousine cars, reported by Smith & Mabley, include George D. Widener, Renault; Mrs. Josephine Widener, Leon Bollée; Caleb Fox, Simplex; H. Carstairs, Simplex. George H. Earle, Jr., has ordered a Simplex chassis, and two bodies—an open touring and an opera bus.

After an extended trip through the East to get the latest ideas in construction and equipment, Mr. Mathewson, of the Mathewson Automobile Company, of Denver, has returned and had plans prepared for a new garage which, he says, will be the most complete and up-to-date in the West. It is to be erected at 1622 to 1626 Broadway, Denver, and is to cost \$20,000. It is to be

completed by January 1. Two of the oldest landmarks of the city are being razed on the site.

Jacob Roth, of Erie, Pa., a dealer in bicycles and automobiles, is erecting a two-story building on State street, a part of which will be used for the display of new cars, and is putting up a garage at the rear of the building to be 80 by 75 feet, of fire-proof steel construction. Mr. Roth expects to occupy the new building by March 1.

The National Motor Boat and Sportsman's Show will open at Madison Square Garden February 20, 1906, and continue to and including March 8. Applicants for space at the Garden include most of the old exhibitors and many new ones, and the affair will undoubtedly be attended with its usual success.

Pending the completion of its new building, now under course of erection, the Mar-Del Mobile Company, of Baltimore, has opened a temporary garage at 872-874 Park avenue.

The Fisk Rubber Company's Boston branch has been removed to 239 Columbus avenue, the store formerly occupied by the Oldsmobile Company, and almost directly opposite its former location.

C. W. Blackman, who has been connected with the *Horseless Age*, has severed his connection with that publication to take the position of manager of sales with the Parish & Bingham Company, of Cleveland, O., in which company he has acquired an interest.

The Winkley Company, makers of oiling devices, will shortly remove its plant from Hartford, Conn., to Detroit, Mich. This company has added to its line the Garllus carburetor and the Eureka separator.

The Pure Food Exposition, to be held this winter in Jacksonville, Fla., will include an exhibit of automobiles, the arrangements for which are in charge of W. J. Morgan. Mr. Morgan is now canvassing the automobile manufacturers and dealers, in an effort to get them to exhibit their output, and hopes to have some of the foreign cars on exhibition at the show.

The following agencies have been closed by the Jackson Automobile Company, of Jackson, Mich.: E. P. Blake Company, Boston, Mass.; New England representatives; E. K. Hauser, Washington, D. C.; Diamond Motor Car Company, Philadelphia, Pa.; East Liberty Auto Company, Pittsburg, Pa.; L. C. Howard, 1655 Broadway, New York; Ormond Auto Company, Brooklyn, N. Y.; Paxson Motor Car Company, Cleveland, O.; Seidler & Miner Company, Detroit, Mich.; Hagmann & Hammerly, Chicago, Ill.; Motor Car Company, Minneapolis, Minn.; Jackson Automobile Company, St. Louis, Mo. In Rochester, N. Y., the Jackson output will be handled by the Standard Automobile Company, which was recently reorganized under the laws of the State of New York, with a capital of \$20,000.

The Topeka Auto and Cycle Company, of Topeka, Kan., has taken the agency for the Mitchell cars in that city and adjoining territory.

J. M. Padgett, of Topeka, Kan., will handle the Waverly electric cars in addition to the Stevens-Duryea output.

The Albright Manufacturing Company, whose incorporators are all residents of Muscogee County, Georgia, has applied for a charter to enable it to do business in Columbus, Ga. The corporation is capitalized at \$14,000 and will carry on a general manufacturing and repair business.

The Kansas City Motor Car Company, of Kansas City, Mo., has purchased a site on West Ninth street, opposite the Savoy Hotel,

on which a three-story garage will be erected, to be ready for occupancy about January 15, 1906. The new manufacturing plant of the company at Sheffield, a suburb of Kansas City, is to be ready December 15.

The Parker Automobile Company, of St. Louis, Mo., has secured the agency for the Baker electric cars. This company also handles the Thomas and Autocar machines.

Ray M. Owen has secured the New York agency for the Premier.

The entire output to October 1, 1906, of Reeves four-cylinder, air-cooled motors, made by the Reeves Pulley Company, Columbus, Ind., has been contracted for by a new automobile manufacturing company of Detroit men. A. Y. Malcomson is said to be at the head of the new company, in which H. H. Thorp, formerly of the H. H. Franklin Manufacturing Company, is interested.

The Colonial Automobile Company, recently incorporated in St. Louis, with a capital of \$15,000, has taken the St. Louis agency for the Reo and the Stoddard-Dayton cars. The company, of which S. J. Keiffer is manager, expects to commence operations December 1, using the building at 3944 Olive street as headquarters.

The Cadillac agency for St. Louis has been taken by the Bagnell Automobile Company, who will open shortly in Olive street, between Sarah and Whittier streets. The Cadillac Company was formerly represented in St. Louis by the Halsey Auto Company.

A. H. Chadbourne, vice-president of the Cape May Automobile Club, is now associated with E. B. Gallaher, the New York agent for Richard Brasier and Cleveland cars.

Wilbur C. Walker, secretary of the Pope Manufacturing Company, of Hartford, Conn., has adopted a novel means of demonstrating the efficiency of the new four-cylinder Pope-Hartford car. Mr. Walker is visiting the Pope agents throughout the country in the car, having already shown the machine in the various Eastern cities, and has started on an extended Western tour.

G. G. Williams & Son, of Charlevoix, Mich., have removed to New Bedford, Mass., where they will open an automobile garage and repair shop.

The E. R. Thomas Motor Company, of Buffalo, N. Y., has begun the manufacture of a thousand machines, which will be sold with a guaranteed speed of a mile a minute. The price of the machine is to be \$3,500.

The H. H. Franklin Manufacturing Company has secured an entrance to its repair shop from Gifford street. Removal of several old buildings permits the erection of a suitable structure provided with reading and smoking room for the accommodation of customers who run their cars to the factory for emergency repairs.

W. B. Durphey has succeeded F. J. Fanning as Chicago manager of the Electric Vehicle Company.

W. E. Metzger, who has been in the retail trade at Jefferson avenue and Brush street, Detroit, has sold out his business, and the Cadillac Motor Car Company will occupy the store as its local branch.

Manager McMasters has resigned his position with the Detroit branch of the Hartford Rubber Works and will manage the local branch of the Firestone Tire and Rubber Company.

The Motor Car Company, recently incorporated in Detroit, has leased the old Stearns factory on Twenty-first street and is now putting in new machinery, preparatory to the manufacture of a friction drive car, to be listed at \$1,250, after the design of B. J. Carter, who is superintendent of the new company.

The Briscoe Manufacturing Company, of Detroit, is building an extension to its plant and has leased the building on the opposite side of Baltimore avenue, at present occupied by the Wheeler Manufacturing Company, who will shortly vacate the premises.

The Merrill-Stevens Manufacturing Company, of Kalamazoo, Mich., for twenty-one years engaged in the manufacture of railway goods, has changed its name to Cook's Railway Appliance Company. There will be no change in the management of the company.

P. C. Rutan, of Port Jervis, N. Y., who has for some time been conducting a bicycle and automobile business on Front street, will early in the new year open a similar business in Middletown, N. Y., and for this purpose is erecting a concrete garage, 30 by 100 feet, facing North street, near the Erie depot.

The following agencies have been closed by the Winton Motor Carriage Company: The Success Automobile Company to cover southern California; the control of Hawaii territory to the Pioneer Automobile Company, of San Francisco; the Troy, N. Y., Automobile Exchange to handle the car in Schenectady, N. Y.; the Broadway Automobile Company, present agents in Seattle, will open a branch in Portland, Ore.

A. Fisher, of Detroit, Mich., who has been engaged in the manufacture of carriages and wagons, has converted his establishment into an automobile salesroom and repair shop. Mr. Fisher's place is at 302-310 Fort street, west.

The Welch Motor Car Company of Flint, Mich., has certified to an increase in capital from \$100,000 to \$250,000.

The Traverse City Motor Boat Company has been organized at Traverse City, Mich., with a capital of \$10,000. The company has purchased a two-story factory building and will manufacture power boats. Enough orders are already on hand to keep the factory employed all winter.

Daniel Cohen, formerly of the Reo agency in New York, has succeeded Manager Stockbridge as head of the Philadelphia headquarters of the Reo in the Mint Arcade.

Alexander Winton is building a motor for a modern cruising power boat which will be equipped for his own use. The craft will have an over-all length of 52 feet and a beam of 10 feet and will be handsomely furnished and equipped throughout. Mr. Winton is a member of the Lakewood Yacht Club, of Cleveland, and his residence faces on the lake front. He expects to take a cruise in the boat next summer.

The Central Automobile Company of New York city has leased the George McNulty livery stable, which it will occupy as a garage after extensive alterations have been completed.

The Holmes-Schmidt Company has taken the Chicago agency for the Glide and the Maxwell cars, which it will handle in addition to the Welch.

The Currie Motor and Cycle Company of Battle Creek, Mich., which purchased the stock of Losey & O'Riley, has been incorporated under the title American Motor and Cycle Company, with a capital of \$10,000. The plant is located at 35 East Main street. The officers are as follows: C. G. Currie, president; F. Jay Rathbun, secretary; Charles E. Moore, treasurer.

A garage and automobile machine shop business is to be established in Fort Wayne, Ind., by Messrs. Amos J. and Peter Roussey, under the firm name of Amos J. Roussey & Bro. The company will occupy the Pfeiffer building at 219 to 223 Pearl street.

Frank H. Bowen, recently with the Renault Company, and who occupied a position with John Wanamaker when the latter held the agency for the Ford car, has connected himself with the Wayne Company, of New York.

The Rainier Company has closed with the Morristown Garage Company to act as its representatives in middle New Jersey, and with T. S. Morse, Lenox, Mass., for the Berkshire district.

Charles E. Fay, for two years assistant manager at the Boston branch of the Winton Motor Carriage Company, has accepted the position of New England manager of the Ford Motor Company.

One of the attaches of the Olds Motor Works, although not really an employee of the firm, is Chan Hoey, a full-blooded Chinaman from Shanghai, who is taking a course of instruction with the idea of returning to Shanghai to establish a general machine and repair shop. He is learning the construction and operation of the various models manufactured by the Olds company. Chan came to America about fifteen years ago and attended school at Boston. Eight years ago he entered the works of the General Electric Company at Lynn, Mass., where he remained for about two years, and then went to Schenectady shops. Later he entered the employ of the Westinghouse company in Pittsburg, where he worked until about two months ago, when he went to Lansing. He expects to return to China in January. In addition to Chan, there is a Japanese, a Russian and a German studying gasoline engine and automobile construction in the Lansing factory.

The Rock Island Battery Company, which manufactures dry batteries, has removed from Rock Island, Ill., to Cincinnati, O.

The Phoenix Automobile Supply Company, recently incorporated in St. Louis, has taken over the stock of the Auto Exchange & Supply Company. Mr. Mulford is president of the company and A. L. Dyke is manager.

The Reo Motor Car Company is adding to the attractiveness of its office building in Lansing, Mich., by the erection of a porte-cochère.

#### RECENT INCORPORATIONS.

The Walker Motor Car Co., Detroit, Mich.; capital, \$300,000.

American Motor & Cycle Co., Battle Creek, Mich.; capital, \$10,000.

The Private Garage, Brooklyn, N. Y.; capital, \$2,000. Directors: C. H. Hyde, S. K. Kellock, J. F. Meeder.

Leon Rubay, New York; automobiles; capital, \$25,000. Directors: Leon Rubay, C. N. Pitcher and H. J. Hinley.

Craven Sectional Tire Company, Albany, N. Y.; manufacture automobiles; capital, \$40,000. Directors: H. O. Craven, Langdon Gibson, Gaylord Logan.

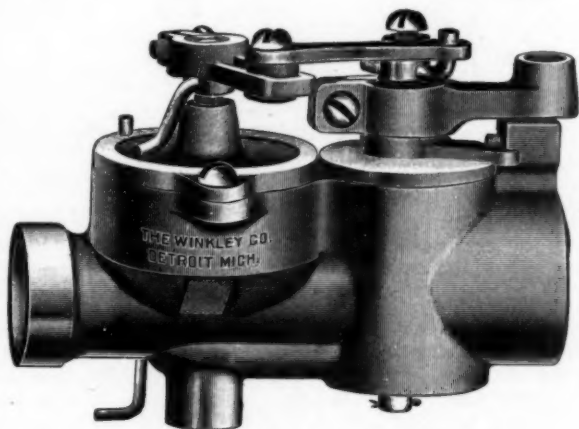
Roseville Motor Co., 830 Broad street, Newark, N. J.; manufacture motor vehicles, engines, machinery, etc.; capital, \$25,000. Incorporators: E. U. Mott, Henry Setlow, G. M. Barnes.

While Elmer Cooper, who lives near here, was grinding corn his engine broke down, but he got out his auto, jacked it up on wheels, geared it to his mill and ground corn with it for several days until his engine was repaired.—Crescent, Frankfort, Ind.



## INFORMATION FOR BUYERS.

**GARLLUS CARBURETER.**—A carbureter working without a float has been placed on the market and is manufactured by the Winkley Company, of Detroit, Mich.; the device is called the Garllus carbureter. It is exceedingly simple in construction, having for its main part a short cylindrical casting, lying in a horizontal position; rising vertically from the bottom is the spray nozzle, at right angles to the direction of the current of air through the carbureter. When the engine is not running a needle valve rests on the opening of the spray nozzle,



GARLLUS FLOATLESS CARBURETER.

preventing the flow of gasoline. The needle valve is attached to a disc placed in a cylindrical chamber above the spray nozzle. The upper part of this chamber, over the disc, is in communication with the mixing chamber, so that the suction of the engine has the effect of raising the disc, and with it the needle valve, thus opening the nozzle and permitting the gasoline to flow. The amount of opening is, of course, in proportion to the suction; the lift is regulated by a screw, and, once made, this adjustment is practically permanent. This carbureter is made in various styles for different two-cycle and four-cycle motors, and is used for automobile, marine and stationary work.

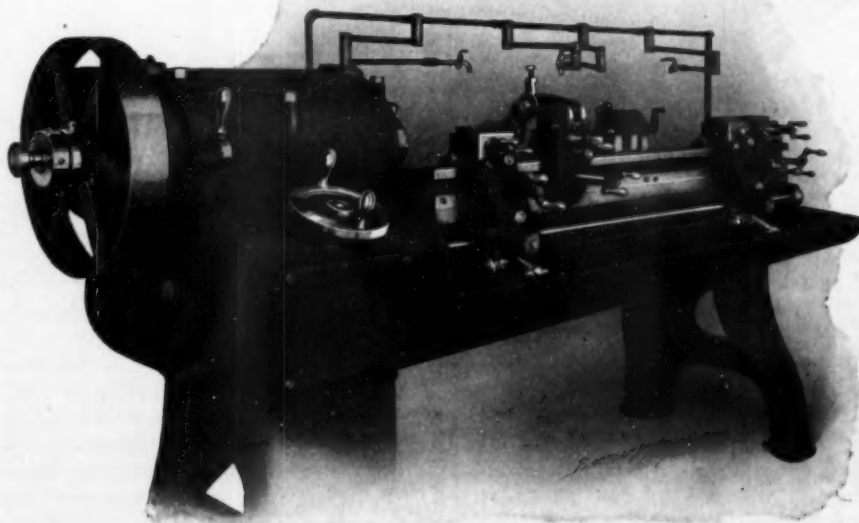
**SPEED INDICATOR.**—With a view to producing a combined speed recorder, trip odometer and total odometer with as few objectionable features as possible. E. J. Loring, of Somerville, Mass., has brought out an instrument—employing centrifugal force to move the speed-recording hand on a circular dial—which possesses a number of features of merit. The manufacturer states that the weights employed are absolutely unaffected by the position of the instrument or by its motion, no movement except that of the shaft having any effect on them; and that the indication of the dial pointer is always correct, regardless of the position of the instrument, swaying or jarring of the car or other disturbing influences. The standard dial reads from 3 miles an hour to 50 miles, and outside the distance figures are red figures, showing the number of minutes per mile for the various distances. The hand is a plain, straight, black bar, readily seen in a dim light; familiarity with the instrument makes it unnecessary to actually read the figures, the position of the hand showing the speed, just as the position of the hands of a clock will show the time, even if the figures cannot be seen. A stop button is fitted, so that the hand can be locked in position if the instrument is needed in court; for instance, as evidence against a

policeman's judgment. The Veeder odometer attached to the instrument measures the distance traveled, and also serves as a check on the correctness of the speed indicator. Drive is by bevel gearing from one of the front wheels of the car, a flexible shaft passing up to the speed indicator. Owing to the arrangement of the gearing there is no sharp bend of the flexible shaft near the gears; and a sharp bend near the instrument is avoided by placing the case overhanging the edge of the dash. The pinion shaft runs in ball bearings; the spindle car-

rying the indicating hand is mounted in a sapphire watch jewel, and all working parts are made for durability. The Loring speed indicator can be fitted to any car.

**LO-SWING LATHES.**—Under the name of the "Lo-Swing Lathe," a machine tool embodying many points of novelty in lathe construction and a wonderful capacity for output of accurate plain turning has been put on the market by the Fitchburg Machine Works, of Fitchburg, Mass. It is a curious fact that while there has been an enormous advance in recent years in machine tools for the production of complicated work, such as machine screws, small parts in which the operations of turning, boring and screw cut-

ting are alternately or simultaneously performed by hand or automatically, there has been comparatively little progress in the direction of plain work necessitating the use of lathe centers. To meet this need the Lo-Swing lathe has been designed. It is specially intended for all straight turning on centers, with any number of diameters and any number of shoulders ranging from 1-2 inch to 3 1-2 inches and all lengths up to 60 inches. The installation of machines of this type means not only the rapid production of true cylindrical work, but the freeing of larger engine lathes from small work, which in many shops occupies the larger machines to the exclusion of their legitimate and more profitable work—sending a man to do a boy's work. As the illustration shows, the lathe has only a general resemblance to an ordinary engine lathe. There is a head stock and a tail stock and four carriages, the latter designed to slide past the tail stock without disturbing the work. The tool carriage differs from the ordinary combination of slides and bridges—in which any lost motion is summed up at the tool point—in consisting of a solid block of metal sliding on a rectangular guide rail. The cutting tool is a piece of high-speed steel fitted in the end of a cylindrical holder and held into its work by a suitable adjusting screw, the handles of which are shown extending rearwardly at the tops of the carriages, in the illustration. It will thus be seen that the screw which controls the cutting tool takes its bearing directly against the end of the tool, and not several inches below it, as in an ordinary slide rest. The cutter holder can be instantly removed by releasing a clamp in the carriage and a new tool substituted. The four carriages are tied together in pairs, and the sets can feed in the same or opposite directions. Two roller follower rests are also supplied. There are seven speed changes, and the spindle speeds range from 560 down to 50. Various minor modifications of the regular equipment can be made to order. As there is so much spindle work in an automobile, in fact, every shaft in the machine is of comparatively small diameter, an investigation of the lathe would prove profitable to the engineering department. The makers have produced an excellent and well-written treatise on the machine, which they will doubtless be glad to send to serious inquirers.



LO-SWING SPECIAL LATHE.

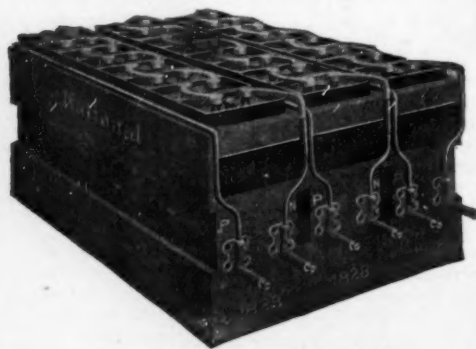
**BULLARD PIPE WRENCH.**—The convenience, not to say necessity, of having about the garage or in the tool box of the automobile a wrench that will firmly grip a pipe or other round object seems to be duly recognized by the Bullard Automatic Wrench Co., of Providence, R. I., whose wrench is illustrated herewith. The wrench is applied to the object to be gripped in such a way that the pressure applied will tend to close up the jaws; thus the heavier the pressure necessary to turn the pipe, for instance, the tighter the wrench will hold; an inspection



BULLARD AUTOMATIC WRENCH.

of the illustration will make the reason clear. The Bullard wrench is made in four sizes, the smallest holding from 0 to 3-4 inch, and the largest from 3-4 inch to 3 inches; the jaw on the pivoted member is removable and can be replaced at small expense.

**NATIONAL AUTOMOBILE BATTERIES.**—Storage batteries of the pasted type have been adopted by the National Battery Company, of Buffalo, N. Y., for automobile work, both for propelling electric cars and for ignition work in gasoline machines. The positive grid is of the form known as staggered; it has a large conducting surface, giving high voltage and low internal resistance, and allowing a high rate of discharge without damage. The negative grid is of the type known as "corrugated, punched and clinched"; the coatings of active material on the two sides of the plate are held together securely by the peculiar construction. The rubber jars used with National automobile batteries, and, in fact, with all types of National batteries, have soft rubber



NATIONAL AUTOMOBILE BATTERY.

strips to carry the weight of the plates in the bottom of the jar, thus reducing the danger of injury to the plate from vibration. The ignition batteries, called "National Sparkers," are assembled in rubber jars with rubber covers, the whole being enclosed in a hard-wood or metal box. The lugs and vent pipes pass through the cover and are sealed with an acid-proof substance, which is melted and poured around the joint. The brass thumbscrews and nuts are covered with a thick coating of lead to prevent corrosion.

**RAILROAD INSPECTION CARS.**—The peculiar advantages of the explosion motor for the propulsion of railroad inspection and other small cars has induced Fairbanks, Morse & Co., of Chicago, Ill., to manufacture an extensive line of such machines. The great power in proportion to weight,

the ease with which fuel for long distances may be carried, the small amount of attention required in operation and the extreme quickness with which such a car may be got under way are all advantages that have been recognized by railroad men, and a great many such machines are now in constant use on railroads in many parts of the world. Inspection cars are made in various styles, from a small machine similar to the well-known railroad "speeder" with seats for two persons, to the comparatively elaborate covered and side-curtained car with cross

seats seating nine or ten people. The manufacturers state that early in the past summer the chief engineer of the Michigan Central Railroad made an inspection trip over the system, covering a total distance of 4,347 miles on a total gasoline consumption of 231 gallons, an average of 19.7 miles per gallon. The operating expenses, exclusive of the wages of the man running the car, averaged nine-tenths of a cent a mile. At one time a distance of 39 miles was covered at the rate of 52 miles an hour. The car used was of the style known to the manufacturers as No. 16, and has a two-cylinder motor developing 12 horsepower. The framing is of riveted steel. The car is regularly equipped with canopy top, glass front and leather upholstered seats. The rear seats can be removed, making the car available for carrying freight.

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